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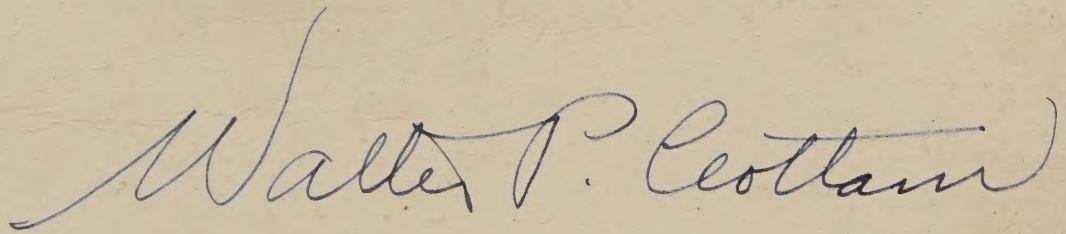
KEY
TO THE
ROCKY MOUNTAIN FLORA

P. A. RYDBERG



KEY

TO THE

ROCKY MOUNTAIN FLORA

COLORADO, UTAH, WYOMING, IDAHO, MONTANA, SASKATCHEWAN, ALBERTA,

AND PARTS OF

NEBRASKA, SOUTH DAKOTA, NORTH DAKOTA, AND BRITISH COLUMBIA

BY

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PREFACE

In Europe, pocket manuals or so-called excursion floras have been very popular. These contain scarcely more than keys to the plants of the regions treated. The author, therefore, thought that a reprint of the keys found in his FLORA OF THE ROCKY MOUNTAINS AND ADJACENT PLAINS* would be useful in a similar way; not that he thought that this little book would be sufficient in studying the vegetation of such a vast territory, for keys are never wholly satisfactory. A few hints may be given, however, to show how and to whom this book may be useful.

The Key may be used in connection with the Flora, or independently. The Flora is too big a book to carry conveniently on a field excursion. The Key is easily carried in a pocket, and by means of it, the preliminary study and determinations can be done in the field while the flowers are fresh, and a more thorough study can be made at home afterwards with the aid of the Flora. In this way, the Key may be very useful to the field-botanist, the forester, the ranger, and the rachsman, who studies the vegetation on horse-back or on foot. It may also be conveniently used in the classroom, together with the Flora. In many cases the school or the students could not afford to buy a copy for each student or each two members of the class, while it could be done in the case of a less expensive book. The drilling in how to determine a plant could be done by means of the Key, and when the plant is tentatively determined, the verifications may be done by means of one or two copies of the Flora, the description in it being read by the teacher or a member of the class.

The Key may also be used independently. It may conveniently be used as a check-book for recording the local flora. Where an inexpensive book is desired, it will be useful, if not sufficient, for the classification of the plants of the Rockies. Many amateur botanists do not care as much for the technical description as for knowing the scientific and common names of the flowers. In this case, the Key may be sufficient, as all the accepted scientific names found in the Flora are also found in the Key. So are also all the common or popular names, except a few which were mentioned in the text and which apply merely to that particular species. These names are, however, mostly given in the index. In the index are also given the most important synonyms of the scientific names of the genera, with a reference to which genus each belongs.

The area covered by the Key, as well as by the Flora, include the entire states of Colorado, Utah, Wyoming, Idaho, and Montana, and extends eastward to Long. 102 W. in Nebraska, South Dakota and North Dakota; it also includes the Canadian provinces of Saskatchewan and Alberta, south of Lat. 55 N. (their old northern boundary), and the Kootenay Districts of British Columbia. The book contains the keys to 1038 genera and 5897 species of flowering plants and fernworts, in other words of all that have been recorded within the region.

It was also advisable to reprint the Glossary of the Flora, as it would be useful to those not too familiar with the scientific terms.

P. A. RYDBERG.

New York Botanical Garden, September, 1918.

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* See advertizement on page 305

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TABLE OF METRIC AND ENGLISH MEASUREMENTS

1 mm. = 1/25 inch	1 line = 2 mm.
3 mm. = 1/8 inch	1/8 inch = 3 mm.
1 cm. = 2/5 inches	1 inch = 2.5 cm.
5 cm. = 2 inches	1 span = 1 dm.
1 dm. = 4 inches	1 foot = 3 dm.
1 m. = 40 inches or 3 1/3 feet	1 yard = 9 dm.
300 m. = 1000 feet	

SPERMATOPHYTA

Seed-bearing or Flowering Plants.

PAGE

Ovules and seeds borne on the surface of an open bract or scale; stigmas wanting.
Class I. GYMNOSPERMAE 17

Ovules and seeds in a closed cavity (ovary), formed by one or more united modified leaves, with one or more stigmas at the end.
Class II. ANGIOSPERMAE 19

Cotyledons usually single; earlier leaves alternate; leaves mostly parallel-veined; stem endogenous. Subclass 1. Monocotyledones 19

Cotyledons mostly 2; earlier leaves opposite; leaves mostly netted-veined; stem exogenous. Subclass 2. Dicotyledones 60

KEY TO THE FAMILIES.

Class 1. **GYMNOSPERMAE.** Naked-seeded Plants.

Perianth none; trees or shrubs with needle- or scale-like leaves not sheathing.
Pistillate flowers in aments; fruit a cone, either dry or berry-like.
Carpellary scales subtended by bracts, never peltate; ovules inverted; buds scaly; wings of the seeds formed from a portion of the carpellary scales.
1. Pinaceae 17

Carpellary scales not subtended by bracts, mostly peltate or fleshy; ovules erect; buds naked; wings of the seeds, if present, a part of the seed-coat.
2. Juniperaceae 18

Pistillate flowers single or in pairs, without carpellary scales; fruit drupaceous or baccate.
3. Taxaceae 18

Perianth present, urn-shaped; pistillate flowers single or in pairs; horsetail-like shrubs with jointed branches and the leaves reduced to sheathing scales.
4. Ephedraceae 18

Class 2. **ANGIOSPERMAE** Seed-vesseled Plants.

Subclass 1. **MONOCOTYLEDONES.**

Small lens-shaped, ellipsoid, or flask-shaped floating aquatics without leaves.
15. Lemnaceae 49

Plants with true stems and leaves, the latter however, sometimes scale-like.
Perianth rudimentary or degenerate, its members often bristles or mere scales, not corolla-like, or wanting.
Flowers not in the axils of dry or chaffy bracts (glumes).
Perianth of bristles or chaffy scales.
Flowers in elongate terminal spikes; fruit hidden among bristles.
5. Typhaceae. 19

Flowers in globose lateral spikes; fruit not hidden among bristles.
6. Sparganiaceae 19

Perianth fleshy or herbaceous, or wanting.
Flowers in dense spikes subtended by an enlarged bract (spathe); fruit baccate; endosperm present; emersed water or bog plants.
14. Araceae 49

Flowers, if spicate, not subtended by a spathe; fruit drupaceous; endosperm wanting; submerged water plants
Gynoecium of distinct carpels; stigma disk-like or cup-like.
7. Zanichelliaceae 19

Gynoecium of united carpels; stigmas 2–4, sleedes.
8. Najadaceae 20

Flowers in the axils of dry or chaffy, usually imbricate bracts (glumes).
Leaves 2-ranked, their sheaths with their margins not united; stem mostly hollow; fruit a grain.
12. Poaceae 21

Leaves 3-ranked, their sheaths with united margins; stems solid; fruit an achene.
13. Cyperaceae 40

Perianth of 2 distinct series, the inner series usually corolloid.
Gynoecium of distinct carpels.
Petals similar to the sepals; anthers long and narrow; carpels coherent.
9. Scheuchzeriaceae 20

Petals different from the sepals, in ours white; anthers short and thick; carpels not coherent.
10. Alismaceae 20

Gynoecium of united carpels.
Stamens numerous; water plants with broad netted-veined floating leaf-blades.
47. Nymphaeaceae 86

Stamens 3–6.
Ovary and fruit superior.
Stamens dissimilar, or only 3 with fertile anthers; endosperm mealy.
Calyx and corolla of free, very different members; stamens free. 16. COMMELINACEAE 49
Calyx and corolla of quite similar members and partly united; stamens partly adnate to the perianth. 17. PONTEDERIACEAE 49
Stamens alike and fertile; endosperm fleshy, horny, or cartilaginous.
Styles present, distinct or united; stigmas terminal.
Styles distinct; capsule septicidal. 18. MELANTHACEAE 50
Styles united, often very short or obsolete during anthesis.
Petals and sepals very unlike; capsules septicidal. 24. CALOCHORTACEAE 56
Petals and sepals nearly alike; capsules loculicidal.
Sepals and petals chaffy. 19. JUNCACEAE 50
Sepals and petals not chaffy.
Herbs with bulbs, corms or rootstocks.
Plants with bulbs, or corms, or short erect rootstocks.
Flowers in umbels, at first included in and later subtended by a scarious involucre. 20. ALLIACEAE 52
Flowers solitary or racemose, or in *Leucocrinum* by shortening of the stem the inflorescence umbel-like, without involucre. 21. LILIACEAE. 54
Plants with elongate horizontal rootstocks. 22. CONVALLARIACEAE 55
Shrubby plants with woody caudices, or trees. 23. DRACAENACEAE 56
Styles wanting.
Flowers perfect; plants not climbing.
Leaves and bracts alternate; plants with bulbs; fruit a capsule. 24. CALOCHORTACEAE 56
Leaves or leaf-like bracts whorled; plants with rootstock; fruit a berry. 25. TRILLIACEAE 56
Flowers dioecious; plants climbing or trailing. 26. SMILACACEAE 56
Ovary and fruit wholly or partly inferior .
Flowers regular; androecium not reduced; stamens 3 or more.
Aquatic plants, dioecious or polygamous. 11. ELODIACEAE 21
Land-plants with perfect flowers.
Stamens 6; leaves not equitant. 27. AMARYLLIDACEAE 56
Stamens 3; leaves equitant. 28. IRIDACEAE 57
Flowers irregular, perfect; terrestrial or epiphytic plants; stamens 1 or 2. 29. ORCHIDACEAE 57

Subclass 2. DICOTYLEDONES.

A. Corolla wanting.

I. Calyx wanting, at least in the staminate flowers.

Herbs.
Land plants; styles distinct, cleft or foliaceous; ovaries 3-celled. 74. EUPHORBIACEAE 150
Aquatic plants; styles simple, united into pairs; ovaries 4-celled. 75. CALLITRICHACEAE 152
Trees or shrubs.
Fruit 1-seeded; seeds without tufts of hairs.
Fruit a nut or an achene. 33. CORYLACEAE 65
Fruit a drupe or a samara. 101. OLEACEAE 179
Fruit many-seeded; seeds each with a tuft of hairs. 30. SALICACEAE 60

II. Calyx present at least in the staminate or in the perfect flowers.

1. Flowers, at least the staminate, in aments or ament-like spikes.

Plant not parasitic; fruit a nut or an achene.
Staminate and pistillate flowers both in aments; fruit not with a bur or cup.
Staminate flowers 2 or 3 together in the axils of the bracts, each with a calyx; pistillate flowers without a calyx. 32. BETULACEAE 64
Staminate flowers solitary in the axils of each bract, without a calyx; pistillate flowers with a calyx. 33. CORYLACEAE 65
Staminate flowers in aments; pistillate ones often solitary.
Fruit a nut, at least partly enclosed in a cup or bur. 31. FAGACEAE 63
Fruit drupaceous, not enclosed in a cup or bur. (*Garrya* in) 95. CORNACEAE. 173

Plant parasitic; fruit berry-like. 125. LORANTHACEAE 221

2. Flowers, at least the staminate, not in aments.

a. Ovary superior.

Gynoecium of 1, or several and distinct carpels; stigma and style of each solitary.

Carpel solitary.

Ovary neither enclosed nor seated in a hypanthium or a calyx-tube.

Flowers not solitary in the axils of the leaves; land plants.

Plants with scarious stipules; flowers cymose. 43. CORRIGIOLACEAE. 81

Plants not with scarious stipules; flowers clustered. 36. URTICACEAE 66

Flowers solitary in the axils of the leaves; aquatic plants. 46. CERATOPHYLLACEAE 86

Ovary enclosed in or seated in a hypanthium or a calyx-tube.

Stamens borne under the gynoecium; calyx corolla-like; herbs. 40. NYCTAGINIACEAE 78

Stamens borne on the hypanthium or adnate to the calyx-tube; calyx not corolla-like; shrubs.

Hypanthium becoming fleshy in fruit, enclosing the tail-less achenes; calyx 4-merous; stamens 4 or 8; leaves silvery-scurfy. 89. ELAEAGNACEAE 160

Hypanthium not becoming fleshy; achenes tailed; calyx 5-merous; leaves not scurfy. (*Coleogyne* and *Cercocarpus* in) 60. ROSACEAE 116

Carpels several.

Stamens inserted below the ovary. (Genera in) 48. RANUNCULACEAE 86

Stamens inserted on the edge of a cup-shaped hypanthium. (Genera in) 60. ROSACEAE 116

Gynoecium of 2 or several united carpels; stigmas or styles 2 or several.

Ovary, by abortion, 1-celled and 1-ovuled.

Leaves with sheathing stipules (ocreae). 37. POLYGONACEAE 66

Leaves estipulate, or stipules, if present, not sheathing.

Trees or shrubs; ovary not seated in a hypanthium. 34. ULMACEAE 65

Herbs or vines.

Stipules herbaceous; inflorescence spicate or racemose; leaf-blades palmately veined. 35. CANNABINACEAE 66

Stipules scarious, or hyaline, or none; inflorescence cymose; leaf-blades pinnately veined.

Fruit a utricle, or achene, circumscissile or bursting irregularly.

Stipules wanting.

Flowers subtended by an involucre formed by more or less united bracts. 37. POLYGONACEAE 66

Flowers not involucrate.

Bracts not scarious. 38. CHENOPODIACEAE 74

Bracts scarious. 39. AMARANTHACEAE 78

Stipules present, scarious. 43. CORRIGIOLACEAE 81

Fruit a capsule, dehiscent by apical or longitudinal valves. 44. ALSINACEAE 81

Ovary several-celled, or with several placentae, several-ovuled.

Stamens hypogynous, inserted under the gynoecium in the perfect flowers, not on a disk in the staminate flowers.

Flowers perfect.

Stamens not tetradynamous.

Stamens 2; inflorescence spicate. (*Besseya* in) 117. SCROPHULARIACEAE 206

Stamens 3–10; inflorescence cymose or axillary.

Ovary 1-celled.

Placentae parietal; pistils 2-carpillary. 57. SAXIFRAGACEAE 110

Placentae central or basal; pistils of 3–5 carpels.

Calyx not petaloid, of 4 or 5 distinct sepals. 44. ALSINACEAE 81

Calyx more or less petaloid, campanulate, merely 5-lobed. (*Glaux in*) 100. PRIMULACEAE 117

Ovary 3–5-celled; leaves verticillate. 41. TETRAGONIACEAE 80

Stamens tetradynamous.
(Apetalous species in) 52. BRASSICACEAE 96
Flowers monoecious or dioecious.
74. EUPHORBIACEAE 150
Stamens perigynous or epigynous, inserted on the margin of a hypanthium or a disk.
Fruit a samara. 78. ACERACEAE 153
Fruit drupe-like or berry-like.
(Apetalous species in) 79. RHAMNACEAE 153

b. Ovary inferior.

Flowers not in involucrate heads.
Fruit a berry, or a drupe, or nut-like.
Shrubs, with scurfy and usually silvery leaves.
89. ELAEAGNACEAE 160
Herbs, not with scurfy leaves.
Stamens as many as the perianth-members and alternate with them, or fewer. 41. TETRAGONIACEAE. 80
Stamens as many as the perianth-members and opposite them, or twice as many; water plants.
Water plants, with whorled leaves.
92. HALORAGIDACEAE 166
Land plants, parasitic or saprophytic, with alternate leaves. 126. SANTALACEAE 221
Fruit a capsule.
Sepals as many as the ovary-cavities.
Hypanthium merely enclosing the ovary.
90. LYTHRACEAE 160
Hypanthium adnate to the ovary. 91. ONAGRACEAE 160
Sepals not of the same number as the ovary-cavities.
Styles 2; leaves alternate. 57. SAXIFRAGACEAE 110
Styles 6; leaves 2, basal. 128. ARISTOLOCHIACEAE 222
Flowers, at least the staminate, in involucrate heads.
Calyx corolla-like. 40. NYCTAGINACEAE 78
Calyx not corolla-like. 133. AMBROSIACEAE 223

B. Corolla present.

I. Petals distinct, at least at the base.

1. Carpels solitary, or several and distinct, or united only at the base.

Stamens at the base of the receptacle, *i. e.*, hypogynous.
Plants with relatively firm stems and leaves, not succulent.
Stamens numerous; anther-sacs opening by slits.
Submerged water plants with minute axillary sessile monoecious flowers; anthers with horn-like appendages.
46. CERATOPHYLLACEAE 86
Land plants or rarely water plants with perfect or rarely dioecious flowers; anthers not with horn-like appendages.
48. RANUNCULACEAE 86
Stamens definite (in ours 6); anther-sacs opening by hinged-valves.
49. BERBERIDACEAE 94
Plants with succulent stems and leaves. 55. CRASSULACEAE 110
Stamens on the margin of a hypanthium (the hypanthium very small in some Saxifragaceae).
Flowers regular or nearly so (actinomorphic).
Endorsperm present, usually copious and fleshy.
Herbs; stipules mostly wanting.
Carpels as many as the sepals; succulent plants.
55. CRASSULACEAE 110
Carpels fewer than the sepals, 2 or rarely 3, distinct or only partly united; plant scarcely succulent.
57. SAXIFRAGACEAE 110
Shrubs or trees; fruit thin-walled follicles; stipules present.
(*Opulaster* in) 60. ROSACEAE 116
Endosperm wanting or scant; stipules mostly present.
Carpels several or numerous, or, if solitary, becoming an achene.
60. ROSACEAE 116
Carpel solitary, not becoming an achene.
Ovary 2-ovuled; fruit a drupe; leaves simple.
62. AMYGDALACEAE 128
Ovary several-ovuled; fruit a legume; leaves pinnately compound. 63. MIMOSACEAE 129

Flowers irregular (mostly zygomorphic).
Upper petal enclosed by the lateral ones in the bud; corolla not papilionaceous. 64. CAESALPINIACEAE 129

Upper petal enclosing the lateral ones in bud; corolla papilionaceous. 65. FABACEAE 129

2. Carpels several and united.

a. Ovary superior.

*** Stamens inserted at the base of the ovary or receptacle.**

† Stamens numerous.

Sepals imbricate.
Filaments united in 3 or more sets; leaves pellucid-punctate.
82. HYPERICACEAE 156
Filaments distinct; leaves not punctate.
Calyx deciduous. 50. PAPAVERACEAE 95
Calyx persistent.
Stigmas distinct or united, but not discoid; land plants; petals and sepals 4.
53. CAPPARIDACEAE 109
Stigmas united into a disk; aquatic plants; petals and sepals numerous. 47. NYMPHAEACEAE 86
Sepals valvate; stamens with united filaments.
81. MALVACEAE 154

†† **Stamens few, not over twice as many as the petals.**

Stamens as many as the petals and opposite them.

Anther-sacs opening by hinged valves.
49. BERBERIDACEAE 94
Anther-sacs opening by slits.
Flowers monoecious. 74. EUPHORBIACEAE 150
Flowers perfect. 42. PORTULACACEAE 80

Stamens as many as the petals and alternate with them, or more, sometimes twice as many.

Stamens 6 or less; petals 4: sepals 2 or 4.
Sepals 2; endosperm present; flowers irregular; stamens diadelphous. 51. FUMARIACEAE 95
Sepals 4, rarely more; endosperm wanting; flowers regular.
Capsule 2-celled; stamens tetradynamous, rarely 2 or 4. 52. BRASSICACEAE 96
Capsule 1-celled; stamens not tetradynamous.
53. CAPPARIDACEAE 109
Stamens, petals, and sepals of the same number, or stamens more, usually twice as many as the sepals or petals.
Ovary 1-celled.
Ovules, or seeds, on basal or central placentae.
Sepals 2; or, if more (in *Lewisia*), plant scapose, with fleshy basal leaves and the flowers solitary on a jointed scape.
42. PORTULACACEAE 80
Sepals 4–5; plants leafy-stemmed.
Sepals distinct; petals not clawed; ovary sessile. 44. ALSINACEAE 81
Sepals united; petals clawed; ovary more or less distinctly stipitate.
45. CARYOPHYLLACEAE 85
Ovules, or seeds, on parietal placentae.
Stamens with united filaments and no staminodia. 81. MALVACEAE 154
Stamens with distinct filaments.
Staminodia present.
56. PARNASSIACEAE 110
Staminodia wanting.
Stigmas 2-cleft; plants insectivorous, with glandular-hispid leaves.
54. DROSERACEAE 110
Stigmas entire; land plants, not insectivorous; leaves not glandular-hispid.
Styles in ours distinct.
Sepals persistent, united into a tube; leaves not pellucid-dotted.
84. FRANKENIACEAE 156
Sepals distinct; leaves pellucid-dotted.
82. HYPERICACEAE 156
Styles wholly united.
Corolla regular or nearly so; stamens 8 or more.
Sepals and petals 4; the latter not fugaceous.
53. CAPPARIDACEAE 109
Sepals and petals 3 or 5; the latter fugaceous.
85. CISTACEAE 156
Corolla irregular; one petal spurred; stamens 5.
86. VIOLACEAE 156
Ovary several-celled.
Stamens adnate to the gynoecium.
106. ASCLEPIADACEAE 183

Stamens not adnate to the gynoecium.
Stamens with wholly or partly united filaments.
Anthers opening lengthwise; corolla regular.
Leaves punctate; filaments polyadelphous, *i. e.*, united in three or more bundles.
82. HYPERICACEAE 156
Leaves not punctate; filaments monadelphous, *i. e.*, united in a single bundle
Styles united around a central column from which they break at maturity. 66. GERANIACEAE 148
Styles distinct or permanently and partly united; the tips and the stigmas free.
Leaves simple; stamens 5.
68. LINACEAE 149
Leaves compound; stamens 10–15.
67. OXALIDACEAE 149
Anthers opening by pores; corolla irregular.
73. POLYGALACEAE 150
Stamens with distinct filaments.
Anthers united; flowers irregular.
69. BALSAMINACEAE 149
Anthers distinct; flowers regular or nearly so.
Anthers opening by pores.
Gynoecium superior; fruit usually capsular.
Herbaceous saprophytes without green leaves.
97. MONOTROPACEAE 174
Herbs with green leaves and rootstocks. 96. PYROLACEAE 174
Gynoecium inferior; fruit baccate or drupaceous.
99. VACCINIACEAE 176
Anthers opening by slits.
Stigmas or styles distinct and cleft, or foliaceous.
74. EUPHORBIACEAE 150
Stigmas or styles distinct or united, neither cleft nor foliaceous.
Style wanting; dwarf water plants.
83. ELATINACEAE 156
Styles present; not water herbs.
Stamens 2, rarely 3.
101. OLEACEAE 179
Stamens more than 3.
Leaves punctate with translucent dots.
72. RUTACEAE 150
Leaves without translucent dots.
Calyx irregular, one of the sepals spurred or saccate; anthers united around the stigma.
69. BALSAMINACEAE 149
Calyx regular; none of the sepals saccate; anthers distinct.
Style basal, arising between the nearly distinct lobes of the ovary; leaves odd-pinnate.
70. LIMNANTHACEAE 150
Styles not basal; leaves in ours abruptly pinnate, or digitate.
71. ZYGOPHYLLACEAE 150

** **Stamens inserted on the margin of a disk or hypanthium (perigynous or hypogynous).**

Styles and upper part of the ovaries distinct.
57. SAXIFRAGACEAE 110
Styles united.
Stamens as many as the petals and opposite them.
Fruit a samara.
78. ACERACEAE 153
Fruit a berry, drupe, or capsule.
Sepals manifest; petals involute; fruit capsular or drupaceous; ours shrubs or trees.
79. RHAMNACEAE 153
Sepals minute or obsolete; petals valvate; fruit a berry; ours vines with tendrils. 80. VITACEAE 154

Stamens as many as the petals and alternate with them, or more.
Hypanthium flat or obsolete; disk fleshy.
Styles united, arising in the center, between the nearly distinct lobes of the ovary; small hydrophytic plants. 70. LIMNANTHACEAE 150
Styles not arising between the ovaries; trees or shrubs.
Plants without secreting glands in the bark.
Plants with resiniferous tissue; fruit drupaceous; seeds without aril; leaves in ours compound. 77. ANACARDIACEAE 152
Plants without resiniferous tissue; fruit a loculicidal capsule; seed with a fleshy aril; leaves simple. 76. CELASTRACEAE 152
Plants with secreting glands in the bark. 72. RUTACEAE 150
Hypanthium cup-shaped or campanulate; disk obsolete or inconspicuous. 90. LYTHRACEAE 160

2. Ovary at least partly inferior.

a. Stamens numerous.

Ovary partly inferior.
Fruit a capsule. 58. HYDRANGEACEAE 114
Fruit a pome. 61. MALACEAE 127
Ovary wholly inferior.
Sepals and petals 4 or 5, very unlike each other; leaves ample.
Trees or shrubs; fruit fleshy. 61. MALACEAE 127
Herbs with rigid hairs; fruit capsular. 87. LOASACEAE 157
Sepals and petals nearly alike, at least the latter numerous; leaves typically and in all ours mere scales or wanting; succulent plants armed with spines. 88. CACTACEAE 158

b. Stamens not more than twice as many as the petals.

Styles wanting; stigmas sessile. 92. HALORIGIDACEAE 166
Styles present.
Plants without tendrils.
Styles distinct.
Ovules several in each cavity of the ovary; fruit a capsule or a fleshy many-seeded berry.
Fruit, if dehiscent, valvate.
Leaves opposite; fruit a leathery capsule. 58. HYDRANGEACEAE 114
Leaves alternate; fruit a berry. 59. GROSSULARIACEAE 115
Fruit circumscissile. 42. PORTULACACEAE 80
Ovules solitary in each cavity of the ovary; fruit a drupe or 2–5 more or less united achenes.
Fruit drupaceous or baccate; gynoecium 1–several-carpellary, if 2-carpellary the stigmas introrse.
Ovule with a ventral raphe; leaves mostly alternate; blades lobed or compound. 94. ARALIACEAE 173
Ovule with a dorsal raphe; leaves mostly opposite; blades entire or merely toothed. 95. CORNACEAE 173
Fruit dry, a cremocarp; gynoecium 2-carpellary; stigmas terminal. 93. AMMIACEAE 166
Styles united, or single.
Ovary enclosed in or surpassed by the hypanthium or adnate to it.
Anthers opening by pores; fruit a berry. 99. VACCINIACEAE 176
Anthers opening by slits; fruit a capsule.
Ovary with parietal placentae. 87. LOASACEAE 157
Ovary with central or basal placentae.
Hypanthium merely enclosing the ovary. 90. LYTHRACEAE 160
Hypanthium adnate to the ovary. 91. ONAGRACEAE 160
Ovary exceeding the hypanthium, the top free. 58. HYDRANGIACEAE 114
Plants with tendrils; fruit a pepo; leaf-blades palmately veined. 129. CUCURBITACEAE 222

II. Petals more or less united.

A. Ovary superior.

1. Stamens free from the corolla.

Gynoecium of a single carpel; corolla papilionaceous. 65. FABACEAE 129
Gynoecium of several united carpels.
Filaments united.

Stamens diadelphous. 51. FUMARIACEAE 95
Stamens monadelphous.
Anther-sacs opening by slits; calyx and corolla regular. 67. OXALIDACEAE 149
Anther-sacs opening by pores; calyx and corolla very irregular. 73. POLYGALACEAE 150
Filaments distinct.
Corolla regular; anthers distinct.
Herbaceous saprophytes, without green leaves. 97. MONOTROPACEAE 174
Herbs or shrubs with green leaves.
Corolla of essentially distinct petals, *i. e.*, united only at the base; herbs with rootstocks. 96. PYROLACEAE 174
Corolla of distinctly united petals; shrubs. 98. ERICACEAE 174
Corolla irregular; one of the petals free; anthers united. 69. BALSAMINACEAE 149

2. Stamens partially adnate to the corolla.

a. Stamens as many as the lobes of the corolla and opposite them, or twice as many or more; ovary 1-celled; placentae central or basal. 100. PRIMULACEAE 176

b. Stamens as many as the lobes of the corolla and alternate with them, or fewer.

*** Corolla not scarious, veiny; fruit various, but not a pyxis.**

† Carpels distinct, except sometimes at the apex.

Styles united; stamens distinct or gynandrous. 105. APOCYNACEAE 181
Styles distinct; stamens monadelphous. 106. ASCLEPIADACEAE 183

†† Carpels united.

Ovary 1-celled, with central placentae.
Corolla-lobes convolute or imbricated in the bud; leaves typically opposite and simple. 103. GENTIANACEAE 179
Corolla-lobes induplicate-valvate in the bud; leaves alternate, in ours mostly basal and trifoliolate. 104. MENYANTHACEAE 181
Ovary 2–3-celled, or falsely 4-celled, or if 1-celled with parietal placentae.
Stamens 2, opposite to each other; corolla regular. 101. OLEACEAE 179
Stamens usually more than 2, if only 2 not opposite to each other and the corolla irregular.
Leaves with stipules or stipular lines. 102. LOGANIACEAE 179
Leaves without traces of stipules.
Stamens 5, if only 3–4, not didynamous.
Fruit a capsule or berry; ovary not 4-lobed.
Styles or stigmas usually distinct.
Parasitic twining plants, with scale-like leaves. 108. CUSCUTACEAE 184
Plants not parasitic; leaves normal.
Inflorescence not scorpioid; flowers cymose or solitary; ovary 2–3 celled.
Corolla plaited and the plaits convolute in the bud; flowers axillary, solitary or cymose-conglomerate; plants usually twining. 107. CONVOLVULACEAE 183
Corolla merely convolute in the bud, not plaited; flowers cymose; plants never twining. 109. POLEMONIACEAE 184
Inflorescence more or less distinctly scorpioid; ovary in ours 1-celled or imperfectly 2-celled.
Fruit a capsule. 110. HYDROPHYLLACEAE 190
Fruit more or less drupaceous. 111. EHRETIACEAE 193
Styles and stigmas wholly united.
Ovules few. 109. CONVOLVULACEAE 183
Ovules numerous.

Median axis of the gynoecium in the same plane as the axis of the stem; seeds mostly pitted.
116. SOLANACEAE 204
Median axis of the gynoecium not in the same plane as the axis of the stem; seed tuberculate. (*Verbascum* in)
117. SCROPHULARIACEAE 208
Fruit of 1–4 nutlets; ovary more or less distinctly 4-lobed.
Style or stigma furnished with a glandular ring. 112. HELIOTROPACEAE 193
Style or stigma not furnished with a glandular ring.
Fruit 4 dry nutlets.
113. BORAGINACEAE 193
Fruit more or less drupaceous.
111. EHRETIACEAE 193
Stamens 4 and didynamous, or 2 or 1.
Stamens 2 and opposite to each other; corolla regular. 101. OLEACEAE 179
Stamens, if 2, not opposite to each other, nor the corolla regular.
Carpels ripening into 2 or 4 nutlets, an achene, or a drupe.
Style apical on the lobeless ovary.
114. VERBENACEAE 201
Style arising between the 4 lobes of the ovary.
115. LAMIACEAE 201
Carpels ripening into a capsule.
Placentae of the ovary axile.
Ovary 2-celled, rarely 3–5-celled; land-plants.
117. SCROPHULARIACEAE 206
Ovary 1-celled; ours submerged water plants or bog plants.
118. LENTIBULARIACEAE 217
Placentae of the ovary parietal.
Herbs parasitic on the roots of other plants; leaves scale-like, not green.
119. OROBANCHACEAE 218
Herbs with green leaves, not parasitic. 120. MARTYNIACEAE 218

**** Corolla scarious, veinless; fruit a pyxis.**
121. PLANTAGINACEAE 218

B. Ovary inferior.

Stamens with the filaments free from the corolla.
Stamens 10; anther-sacs opening by terminal pores or chinks.
99. VACCINIACEAE 176
Stamens 5 or fewer; anther-sacs opening by longitudinal slits
Corolla regular; anthers distinct. 130. CAMPANULACEAE 222
Corolla irregular; anthers united. 131. LOBELIACEAE 222
Stamens adnate to the corolla.
Ovary with 2–many fertile cavities and 2–many ovules; calyx unmodified, at least not a pappus.
Plants tendril-bearing. 129. CUCURBITACEAE 222
Plants not tendril-bearing.
Ovules mostly on basal placentae; plants parasitic or saprophytic.
Leaves opposite; fruit a berry; tree-parasites.
125. LORANTHACEAE 221
Leaves alternate; fruit a drupe or nut; root-parasites or saprophytes. 126. SANTALACEAE 221
Ovules variously borne, but not on a basal placenta; plants not parasitic.
Stamens as many as the corolla-lobes.
Leaves with stipules (often leaf-like and usually regarded as leaves) adnate to the stem between the leaf-bases. 122. RUBIACEAE 219
Leaves without stipules or if present these adnate to the petioles. 123. CAPRIFOLIACEAE 219
Stamens twice as many as the corolla-lobes; low herbs with ternately dissected leaves. 124. ADOXACEAE 221
Ovary with one fertile cavity; calyx often modified into a pappus.
Flowers not in heads, often in head-like spikes or racemes.
127. VALERIANACEAE 221
Flowers in involucrate heads.
Flowers all with tubular corollas or none, or only the ray-flowers with ligulate corollas.

Stamens distinct.
Flowers hermaphrodite, surrounded by a cup-like involucel; anthers versatile. 132. DIPSACEAE 223
Flowers unisexual, not involucellate; anthers basifixed. 133. AMBROSIACEAE 223
Stamens united by the anthers, or if distinct (in *Kuhnia*) the flowers hermaphrodite and anthers basifixed. 134. CARDUACEAE 224
Flowers all with ligulate corollas. 135. CICHORIACEAE 273

Class 1. **GYMNOSPERMAE.** Naked-seeded Plants.

Family 1. **PINACEAE.** Pine Family.

Leaves several together (in one species solitary), surrounded by a sheath at the base; cones maturing the second year.
- Cone-scales with dorsal, usually spine-armed appendages.
  - Seeds with elongated wings attached to the seeds when they fall; leaves mostly with two fibro-vascular bundles. 1. Pinus.
  - Seeds with narrow or rudimentary wings, which remain attached to the scales when the seeds fall; leaves with a single fibro-vascular bundle. 2. Caryopitys.
- Cone-scales with inconspicuous terminal unarmed appendages.
  - Seeds with rudimentary wings attached to the scales; cones subsessile, spreading. 3. Apinus.
  - Seeds with well-developed wings, which remain attached to the seeds; cones distinctly stalked, pendulous. 4. Strobus.

Leaves not surrounded by sheaths; cones maturing the first year.
- Leaves in fascicles at the ends of short branches, deciduous. 5. Larix.
- Leaves scattered along the branches, persistent.
  - Branches smooth, not roughened by persistent leaf-bases.
    - Cones erect, their scales and bracts deciduous from the persistent axis; leaves sessile with circular leaf-scars. 6. Abies.
    - Cones pendulous, their scales and bracts persistent; leaves petioled with transversal oval leaf-scars. 7. Pseudotsuga.
  - Branches roughened by persistent leaf-bases (sterigmata).
    - Leaf-blades petioled with a single dorsal duct; anthers opening transversely; seeds with resin-vesicles.
      - Leaves flat, with stomata only on the lower side, 2-ranked by twisting of the petioles; cones small, drooping. 8. Tsuga.
      - Leaves not much flattened, keeled on the lower side, with stomata on both sides, spreading in all directions; cones elongated, erect at least at first. 9. Hesperopeuce.
    - Leaf-blades sessile, with two lateral ducts, in ours 4-angled and spreading in all directions; anthers opening longitudinally; seeds without resin-vesicles. 10. Picea.

1. **PÌNUS** (Tourn.) L. Hard Pines, Pitch Pines.

Leaves in 4's or 5's, with solitary fibro-vascular bundles and more or less deciduous sheaths; spines of the cone-scales long and slender. 1. *P. aristata.*

Leaves in 2's or 3's, with usually two fibro-vascular bundles and persistent sheaths; spines of the cone-scales short or none.
- Cones 6–15 cm. long and 5–6 cm. in diameter; leaves 8–25 cm. long.
  - Leaves 12–25 cm. long; cones 8–15 cm. long, elongated-ovoid. 2. *P. ponderosa.*
  - Leaves 8–15 cm. long; cones 6–9 cm. long, rounded-ovoid. 3. *P. scopulorum.*
- Cones 3–5 cm. long and about 3 cm. in diameter.
  - Cones spreading, or somewhat reflexed; scales with evident dorsal spines. 4. *P. Murrayana.*
  - Cones erect, more or less incurved; scales unarmed or nearly so, at least at maturity. 5. *P. Banksiana.*

2. **CARYÓPITYS** Small. Nut-pines, Piñons.

Cones about 3 cm. long; leaves usually in pairs, seldom in threes. 1. *C. edulis.*

Cones 4–5 cm. long; leaves singly or sometimes in pairs. 2. *C. monophylla.*

3. **APÌNUS** Necker. Cembra Pines.

Cones 8–15 cm. long; scales neither much thickened nor impressed around the scar, spreading at maturity. 1. *A. flexilis.*

Cones 5–8 cm. long; scales much thickened and impressed around the terminal scar, remaining closed. 2. *A. albicaulis.*

4. **STRÒBUS** Opiz. White Pines. 1. *S. monticola.*

5. **LÀRIX** (Tourn.) Adans. Larch, Tamarack.

Cones 1–2 cm. long, subglobose; their scales few, longer than the bracts; leaves 3-angled. 1. *L. laricina.*

Cones 2–4 cm. long, ovoid; their scales numerous, shorter than the bracts.
- Leaves triangular; branches soon becoming glabrate. 2. *L. occidentalis.*
- Leaves quadrangular; branchlets tomentose. 3. *L. Lyallii.*

6. **ÀBIES** (Tourn.) Hill. Fir, Balsam.

Resin-ducts of the leaves within the soft tissues, remote from the epidermis.
- Bracts longer than the cone-scales; leaves dark green above, pale beneath. 1. *A. balsamea.*

Bracts much shorter than the cone-scales; leaves blue-green and glaucous.
Bark of the trunk hard, not corky; cone-scales longer than broad. 2. *A. lasiocarpa.*
Bark of the trunk elastic, corky; cone-scales broader than long. 3. *A. arizonica.*
Resin-ducts of the leaves close to the epidermis on the lower side.
Bracts obcordate with a short acumination; leaves (except those of the cone-bearing branches) emarginate, dark green above, white beneath. 4. *A. grandis.*
Bracts truncate with a short acumination; leaves acute or acuminate, seldom obtuse at the apex, pale blue-green and glaucous 5. *A. concolor.*

7. PSEUDOTSÙGA Carr. Red Fir, False Spruce. 1. *P. mucronata.*

8. TSÙGA (Endl.) Carr. Hemlock. 1. *T. heterophylla.*

9. HESPEROPEÙCE Lemmon. Black Hemlock, Mountain Hemlock.

10. PÌCEA Link. Spruces. 1. *H. Mertensiana.*

Cone-scales rounded at the apex.
Branchlets pubescent; cones 1.5–3 cm. long, persistent for several years; scales rigid, erose or dentate. 1. *P. Mariana.*
Branchlets glabrous; cones 3–5 cm. long, deciduous in the first winter; scales rather thin.
Cone-scales entire or minutely denticulate on the margins; cones cylindric-oblong, 3.5–5 cm. long. 2. *P. canadensis.*
Cone-scales erose on the margins; cones ellipsoid, 3–3.5 cm. long. 3. *P. albertiana.*
Cone-scales more or less rhomboid in outline.
Branchlets pubescent; cones 3–5 cm. long. 4. *P. Engelmanni.*
Branchlets glabrous; cones 5–9 cm. long. 5. *P. pungens.*

Family 2. **JUNIPERACEAE.** Juniper Family.

Plants monoecious; cones dry; scales merely imbricate. 1. Thuja.
Plants mostly dioecious; cones berry-like or drupe-like, with coalescent fleshy scales.
Aments axillary; cones with smaller scales at the top; leaves all subulate and spreading. 2. Juniperus.
Aments terminal; pistillate cones with larger scales at the top; leaves at least of the mature plants scale-like and appressed. 3. Sabina.

1. THÙJA L. Arbor Vitae, White Cedar. 1. *T. plicata.*

2. JUNÍPERUS (Tourn.) L. Juniper.

Low shrub with depressed branches; leaves abruptly bent at the base, deeply channeled, abruptly acute. 1. *J. sibirica.*
Tree or erect shrub; leaves straight or nearly so, shallowly channeled, gradually acuminate. 2. *J. communis.*

3. SABÌNA Haller. Red Cedar.

Fruit reddish-brown or bluish by a bloom, with dry fibrous sweet flesh. 1. *S. utahensis.*
Fruit blue or blue-black, rarely copper-colored, with juicy resinous flesh.
Trees or erect shrubs; fruit on straight peduncles.
Leaves minutely dentate at the apex; fruit 5–8 mm. in diameter.
Leaves not glandular or obscurely so; seeds usually 1. 2. *S. monosperma.*
Leaves very glandular; seeds 2 or 3. 3. *S. occidentalis.*
Leaves entire; fruit 4–5 mm. in diameter, usually with more than one seed. 4. *S. scopulorum.*
Prostrate shrub; fruit on recurved peduncles. 5. *S. horizontalis.*

Family 3. **TAXACEAE.** Yew Family.

1. TÁXUS (Tourn.) L. Yew. 1. *T. brevifolia.*

Family 4. **EPHEDRACEAE.** Joint Fir Family.

1. EPHÉDRA L. Joint Fir, Brigham Tea.

Scales and branches opposite; bracts opposite and connate, only the margins scarious.
Scales distinct, subpertensist; filaments free above. 1. *E. antisyphylitica.*
Scales connate, sheathing, scarious, deciduous; filaments adnate to the top of the bracts.
Branches stout, more or less spreading; plant light brownish green. 2. *E. nevadensis.*
Branches slender, erect; plant bright yellowish green. 3. *E. viridis.*
Scales, branches, and bracts in 3's; bracts scarcely connate, those of the pistillate aments nearly wholly scarious and more or less unguiculate.
Scales 2–3 mm. long, not becoming shreddy; fruit scabrous. 4. *E. Torreyana.*
Scales 6–12 mm. long, becoming shreddy; fruit smooth. 5. *E. trifurca.*

Class 2. **ANGIOSPERMAE.** Seed-vesseled Plants.

Subclass I. **MONOCOTYLEDONES.**

Family 5. **TYPHACEAE.** Cat-tail Family.

1. TŸPHA (Tourn.) L. Cat-tail, Cat-tail Flag.

Racemes with the staminate and pistillate portions usually separate; pollen of simple grains; fruiting pedicels short, 1 mm. long or less. 1. *T. angustifolia.*
Racemes with the staminate and pistillate portions usually contiguous; pollen-grains in 4's; fruiting pedicels bristle-like, 2–3 mm. long. 2. *T. latifolia.*

Family 6. **SPARGANIACEAE.** Bur-reed Family.

1. SPARGÀNIUM (Tourn.) L. Bur-reed.

Achenes broadly obovoid or cuneate-obpyramidal, sessile, long-beaked; stigmas usually 2; leaves somewhat keeled. 1. *S. eurycarpum.*
Achenes fusiform (in *S. minimum* somewhat obovoid, but then short-beaked and short-stipitate); stigmas solitary.
Stipe and beak of the fruit each 2 mm. long or more; fruiting heads 1.5 cm. in diameter or more; anthers 3–4 times as long as broad.
Leaves, at least the middle ones, strongly triangular-keeled; fruiting heads about 3 cm. in diameter; achenes brown, gradually tapering into the beak, which is fully as long as the body. 2. *S. simplex.*
Leaves not keeled or only slightly so, narrow and slender; stem often floaous-beak of the achenes decidedly shorter than the body.
Leaves usually 5–10 mm. wide, as well as the bracts conspicuously scarious-margined; heads 1.7–2 cm. in diameter; achenes gradually beaked. 3. *S. multipedunculatum.*
Leaves 3–4 mm. wide, not conspicuously scarious-margined; heads about 1.5 cm. in diameter; achenes abruptly beaked. 4. *S. angustifolium.*
Stipe and beak of the fruit short, less than 1 mm. long; fruiting heads about 1 cm. in diamater; stigmas oblong; anthers 1.5–2 times as long as broad. 5. *S. minimum.*

Family 7. **ZANNICHELLIACEAE.** Pondweed Family.

Stamens 4, the connectives with dilated appendages; drupelets sessile. 1. Potamogeton.
Stamens 1–2, the connectives without appendages; drupelets manifestly stipitate.
Stigmas sessile; anthers 2; flowers perfect, on long peduncles. 2. Ruppia.
Stigma terminating a long style; anther 1; flowers monoecious, the two kinds together in the same axils. 3. Zannichellia.

1. POTAMOGÈTON (Tourn.) L. Pondweed, Fishweed.

Species with both floating and submerged leaves.
Submerged leaves bladeless. 1. *P. natans.*
Submerged leaves with proper blades.
Submerged leaves of two kinds, oval or oblong ones and lanceolate and strongly curved ones; floating leaves with 30 or more nerves. 2. *P. amplifolius.*
Submerged leaves of only one kind; floating leaves with less numerous nerves.
Stipules free from the petioles and blades.
Submerged leaves lanceolate.
Submerged leaves all petioled, more than 7-nerved. 3. *P. americanus.*
Submerged leaves all sessile or the uppermost short-petioled.
Peduncles of the same thickness as the stem; leaves not serrulate at the apex.
Plant green; submerged leaves narrower than the floating ones. 7. *P. heterophyllus.*
Plant red; submerged leaves as wide as the floating ones or wider. 4. *P. alpinus.*
Peduncles thicker than the stem; leaves serrulate at the apex. 5. *P. augustifolius.*
Submerged leaves linear.
Submerged leaves of nearly the same width throughout, coarsely reticulate in the middle. 6. *P. epihydrus.*
Submerged leaves broader below the middle, without reticulation. 7. *P. heterophyllus.*
Stipules adnate to the base of the linear-setaceous submerged leaves. 8. *P. diversifolius.*
Species with submerged leaves only.
Leaves with broad blades, lanceolate or oval, many-nerved.
Leaves short-petioled or sessile, not amplexicaul. 9. *P. lucens.*
Leaves more or less amplexicaul.
Leaves elongate-lanceolate, semi-amplexicaul, cucullate; the straight apex of the embryo pointing to the base of the fruit. 10. *P. praelongus.*

Leaves rounded-ovate to short-lanceolate, amplexicaul, not cucullate; the curved embryo pointing inside the base of the fruit. 11. *P. Richardsonii.*
Leaves narrowly linear to capillary.
Stipules free from the petioles and the leaf-blades.
Leaves 1.5–4 mm. wide.
Species without glands at the base of the leaves; leaves with 3 principal nerves and several fine ones. 12. *P. compressus.*
Species with glands at the base of the leaves.
Glands large and translucent; nerves mostly 3; the curved end of the embryo pointing inside the base of the fruit. 13. *P. obtusifolius.*
Glands small, dull; nerves of the leaves 5–7; the straight end of the embryo pointing to the base of the fruit. 14. *P. Friesii.*
Leaves seldom more than 1.5 mm. wide, often less.
Glands absent; nutlets keeled. 15. *P. foliosus.*
Glands present; nutlets not keeled. 16. *P. pusillus.*
Stipules adnate to the base of the leaves.
Leaves 1.5 mm. wide or less, with entire margins.
Stigma broad, sessile; nutlets indistinctly 1-keeled or keel-less.
Leaves filiform, less than 0.5 mm. wide; stipular sheaths 3–8 mm. long. 17. *P. filiformis.*
Leaves about 1 mm. wide; stipular sheaths 1–2 cm. long. 18. *P. interior.*
Stigma capitate, on an evident style; nutlets with 2 lateral but no median keel. 19. *P. pectinatus.*
Leaves several-nerved, 3–6 mm. wide, finely serrulate seen under a lens. 20. *P. Robbinsii.*

2. RÚPPIA L.

Sheaths 6–10 mm. long; drupe about 2 mm. long or less.
Drupe very oblique; beak 0.5–1 mm. long. 1. *R. maritima.*
Drupe scarcely oblique, almost beakless. 2. *R. pectinata.*
Sheaths 20–40 mm. long; drupe 3–4 mm. long. 3. *R. occidentalis.*

3. ZANNICHÉLLIA (Mich.) L. 1. *Z. palustris.*

Family 8. **NAJADACEAE.** Najas Family.

1. NÀJAS L.

Leaves 1–3 mm. wide, coarsely toothed; back of the leaves and internodes spiny; plant dioecious. 1. *N. marina.*
Leaves 0.5–1 mm. wide, finely, almost microscopically serrulate; back of the leaves and internodes unarmed; plant monoecious.
Drupe shining, with 30–50 rows of indistinct reticulations. 2. *N. flexilis.*
Drupe dull, with 16–20 rows of strongly marked reticulations. 3. *N. guadalupensis.*

Family 9. **SCHEUCHZERIACEAE.** Arrow-grass Family.

Stem scapose; leaves all basal; flowers spicate or racemose. 1. Triglochin.
Stem leafy; flowers few, in loose racemes. 2. Scheuchzeria.

1. TRIGLÒCHIN L. Arrow-grass.

Carpels 3; fruit linear-clavate, tapering at the base. 1. *T. palustris.*
Carpels 6; fruit oblong or ovoid, obtuse at the base. 2. *T. maritima.*

2. SCHEUCHZÈRIA L. 1. *S. palustris.*

Family 10. **ALISMACEAE.** Water-plantain Family.

Carpels in a ring on a small flat receptacle; flowers perfect. 1. Alisma.
Carpels in several series on a convex receptacle; flowers monoecious or dioecious. 2. Sagittaria.

1. ALÍSMA L. Water-plantain.

Achenes longer than wide, grooved on the back, their inner edges not meeting; pedicels straight, ascending. 1. *A. brevipes.*
Achenes as wide as long, ribbed on the back, their inner edges meeting; pedicels recurved. 2. *A. Geyeri.*

2. SAGITTÀRIA L. Arrow-head, Swan or Swamp Potato.

Leaf-blades usually without basal lobes; beak borne below the top of the achenes. 1. *S. graminea.*
Leaf-blades or some of them sagittate or hastate, with basal lobes; beak borne at the top of the achenes.
Beak short, erect; bracts lanceolate or linear-lanceolate.
Basal lobes of the leaves acute or acuminate. 2. *S. cuneata.*
Basal lobes of the leaves rounded or obtuse. 3. *S. hebetiloba.*
Beak of the achenes horizontal.
Beak short; basal lobes of the leaves at least twice as long as the terminal one; bracts lanceolate. 4. *S. longiloba.*
Beak long; basal lobes of the leaves usually shorter than the terminal one; bracts ovate. 5. *S. latifolia.*

Faimly 11. **ELODEACEAE.** Water-weed Family.

1. **PHILÒTRIA** Raf. Water-weed.

Staminate flowers sessile, breaking off within the spathe; petals wanting.
1. *P. Planchonii.*

Staminate flowers on elongating pedicels, carrying them to the water surface; petals present.
2. *P. iowensis.*

Family 12. **POACEAE.** Grass Family.

Spikelets falling from the pedicels entire, naked or enclosed in bristles or bur-like involucres, 1-flowered, or if 2-flowered the lower flower staminate; no upper empty glumes; rachilla not extending above the upper glume.
- Spikelets round or somewhat compressed dorsally; empty glumes manifest; hilum punctiform.
  - Lemma and palet hyaline, thin, much more delicate in texture than the empty glumes.
    - Spikelets in pairs, one sessile and the other pedicellate. Tribe 1. Andropogoneae.
    - Spikelets not in pairs (*Alopecurus*, *Polypogon*, *Cinna*, etc.) Tribe 6. Agrostideae.
  - Lemma, at least that of the perfect flower, similar in texture to the empty glumes, or thicker and firmer, never hyaline and thin.
    - Lemma and palet membranous; the first glume usually larger than the rest. Tribe 2. Zoysieae.
    - Lemma and palet chartaceous to coriaceous, very different in color and appearance from the remaining glumes. Tribe 3. Paniceae.
- Spikelets much compressed laterally; empty glumes none or rudimentary; hilum linear. Tribe 4. Oryzeae.

Spikelets with the empty glumes persistent, the rachilla articulated above them, 1-many-flowered; upper lemmas frequently empty; rachilla often produced beyond the upper lemma.
- Spikelets borne in an open or spike-like panicle or raceme, usually upon distinct pedicels.
  - Spikelets 1-flowered.
    - Empty glumes 4; palet 1-nerved. Tribe 5. Phalarideae.
    - Empty glumes 2, rarely 1; palet 2-nerved (except in *Cinna*.) Tribe 6. Agrostideae.
  - Spikelets 2-many-flowered.
    - Lemma usually shorter than the empty glumes; the awn dorsal and usually bent. Tribe 7. Aveneae.
    - Lemma usually longer than the empty glumes; the awn terminal and straight (rarely dorsal in *Bromus*) or none. Tribe 9. Festuceae.
- Spikelets in two rows, sessile or nearly so.
  - Spikelets on one side of the continuous axis, forming one-sided spikes. Tribe 8. Chlorideae.
  - Spikelets alternately on opposite sides of the axis, which is often articulated. Tribe 10. Hordeae.

Tribe 1. ANDROPOGONEAE.

Racemes singly disposed; apex of the rachis-internodes with a translucent cup-shaped appendage. 1. Schizachyrium.

Racemes disposed in pairs or more; apex of the rachis-internodes not appendaged.
- Rachis-internodes and pedicels sulcate, the median portion translucent, the margins thickened. 2. Amphilophis.
- Rachis-internodes not sulcate.
  - Some or all of the racemes sessile. 3. Andropogon.
  - All of the racemes more or less peduncled.
    - Pedicellate spikelets wanting. 4. Sorghastrum.
    - Pedicellate spikelets present and usually staminate. 5. Holcus.

Tribe 2. ZOYSIEAE.

Only one genus represented. 6. Pleuraphis.

Tribe 3. PANICEAE.

Spikelets naked, not involucrate.
- Empty glumes 2.
  - Rachis produced beyond the upper spikelet; spikelets narrow. 39. Spartina.
  - Rachis not so produced; spikelets globose or obovoid.
    - Spikelets obovoid, turgid. 40. Beckmannia.
    - Spikelets plano-convex. 7. Paspalum.
- Empty glumes 3.
  - Empty glumes not awned.
    - Spikelets in very slender 1-sided racemes, which are usually whorled or approximate. 8. Syntherisma.
    - Spikelets in panicles or panicled racemes.
      - Spikelets lanceolate, acuminate, long-hairy. 9. Vallota.
      - Spikelets orbicular or lanceolate, if the latter, then glabrous. 10. Panicum.
  - Empty glumes awned or awn-pointed. 11. Echinochloa.

Spikelets involucrate.
- Involucre of bristles. 12. Chaetochloa.
- Involucre of two spine-bearing valves. 13. Cenchrus.

Tribe 4. ORYZEAE.

Spikelets perfect; empty glumes wanting or rarely rudimentary. 14. Homalocenchrus.

Tribe 5. PHALARIDEAE.

Third and fourth glumes empty, awnless. 15. Phalaris.
Third and fourth glumes enclosing staminate flowers. 16. Torresia.

Tribe 6. AGROSTIDEAE.

Lemma indurate when mature and very closely embracing the grain, or at least firmer than the empty glumes.
  Spikelets all perfect, not in pairs.
    Lemma 3-awned. 17. Aristida.
    Lemma 1-awned or awnless.
      Awn twisted and bent. 18. Stipa.
      Awn not twisted.
        Lemma broad; awn deciduous.
          Inflorescence paniculate or racemiform. 19. Oryzopsis.
          Inflorescence dichotomous. 20. Eriocoma.
        Lemma narrow, glabrous or with short, appressed hairs; awn, if any, persistent. 21. Muhlenbergia.
  Spikelets in pairs, one perfect and the other staminate or sterile, in a spike-like panicle. 22. Lycurus.
Lemma usually hyaline or membranaceous at maturity, at least more delicate than the empty glumes.
  Stigma sub-plumose (*i. e.*, with short hairs all around), projecting from the apex of the nearly closed glumes.
    Inflorescence spike-like.
      Rachilla of the spikelets articulated above the empty glumes, which are therefore persistent. 23. Phleum.
      Rachilla of the spikelets articulated below the empty glumes, hence the spikelets falling off entire. 24. Alopecurus.
    Inflorescence an open small panicle; dwarf arctic-alpine plant. 25. Phippsia.
  Stigma plumose, projecting from the sides of the spikelets; inflorescence an open or spike-like panicle.
    Grain not permanently enclosed in the lemma and palet; pericarp opening readily at maturity.
      Flowering glumes long-hairy on the veins. 26. Blepharoneuron.
      Flowering glumes not long-hairy on the veins. 27. Sporobolus.
    Grain permanently enclosed in the lemma and the palet; pericarp adherent.
      Spikelets readily falling off when mature. 28. Polypogon.
      Spikelets with the empty scales at least persistent.
        Palet 1-nerved and 1-keeled; stamen 1. 29. Cinna.
        Palet 2-nerved and 2-keeled or sometimes wanting; stamens 3.
          Lemma naked at the base. 30. Agrostis.
          Lemma with long hairs at the base.
            Flowering glume and palet thin-membranous. 31. Calamagrostis.
            Flowering glume and palet chartaceous. 32. Calamovilfa.

Tribe 7. AVENEAE.

Awn of the lemma inserted dorsally below the teeth.
  Flowers all perfect or the upper staminate.
    Grain free, unfurrowed; spikelets less than 1 cm. long.
      Lemma erose-toothed or shortly 2-lobed at the apex. 33. Deschampsia.
      Lemma 2-cleft or deeply 2-toothed at the apex; teeth awn-pointed.
        Awn twisted and bent. 34. Trisetum.
        Awn if present not twisted, straight. 35. Graphephorum.
    Grain furrowed, adherent to the glumes; spikelets exceeding 1 cm. in length.
      Ovary not crowned by a villous appendage. 36 Avena.
      Ovary crowned by a villous appendage (awned species of) 70. Bromus.
  Upper flowers perfect, the lower staminate. 37. Arrhenatherum.
Awn of the lemma inserted between the teeth. 38. Danthonia.

Tribe 8. CHLORIDEAE.

Plants with perfect flowers.
  Spikelets with 1 (rarely 2) perfect flowers.
    Spikelets deciduous as a whole; rachis articulated below the empty glumes.
      Rachis produced above the upper spikelet; spikelets narrow. 39. Spartina.
      Rachis not produced above the upper spikelet; spikelets globose. 40. Beckmannia.
    Spikelets with at least the empty glumes persistent.
      Glumes above the perfect flower none; spikes digitate, very slender. 41. Schedonnardus.
      Glumes above the perfect flower 1–several; spikes scattered.
        Spikes closely approximate, subverticillate. 42. Chloris.
        Spikes scattered. 43. Bouteloua.
  Spikelets with 2–3 perfect flowers; spikelets alternate. 44. Leptochloa.
Plants dioecious; spikelets of the two sexes very unlike. 45. Bulbilis.

Tribe 9. FESTUCEAE.

Lemmas, at least of the pistillate spikelets, 3-lobed and 3-awned; plant dioecious. 46. Scleropogon.

Lemmas entire or at most 3-lobed.
Hairs on the rachilla or the lemma very long and enclosing the latter. 47. PHRAGMITES.
Hairs, if any, on the rachilla and the lemma shorter than the latter.
Stigmas barbellate on elongated styles; spikelets in threes in the axils of spinescent leaves. 48. MUNROA.
Stigmas plumose, sessile or on short styles.
Lemma 1–3-nerved.
Lateral nerves of the lemmas hairy.
Lemma deeply 3-lobed.
Internodes of the rachilla long, often half as long as the lemma; plants without stolons. 50. TRIPLASIS.
Internodes of the rachilla short, many times shorter than the lemmas.
Fertile flower one, with 2 empty lemmas below and one above. 49. BLEPHARIDACHNE.
Fertile flowers 3 or more, with no empty lemmas below. 51. DASYOCHLOA.
Lemma entire or slightly 2-lobed; internodes of the rachilla short.
Inflorescence a short congested raceme; leaf-blades with thick cartilaginous margins. 52. ERIONEURON.
Inflorescence a panicle; leaf-blades not with cartilaginous margins.
Panicle simple or compound, the spikelets on pedicels of varying length. 52. TRIDENS.
Panicle composed of long branches, along which the appressed spikelets are arranged on short pedicels. 54. DIPLACHNE.
Lateral nerves of the lemmas glabrous.
Callus of the lemma copiously pubescent with long hairs; panicle open. 55. REDFIELDIA.
Callus of the lemma glabrous.
Second empty glume similar to the first one or nearly so.
Panicle narrow, dense and spike-like, shining; its branches erect. 56. KOELERIA.
Panicle open; its branches spreading.
Rachilla continuous (except in *E. megastachya*); lemma deciduous; palet persistent; plants of dry soil. 57. ERAGROSTIS.
Rachilla articulated; lemma and palet both deciduous with the rachilla-internodes; water plants with 2-flowered spikelets. 58. CATABROSA.
Second empty glume very unlike the first one, broad at the summit. 59. SPHENOPHOLIS.
Lemma 5–many-nerved.
Spikelets with two or more of the upper glumes empty, broad and enfolding each other. 60. MELICA.
Spikelets with upper glumes flower-bearing or narrow and abortive.
Stigmas arising at or near the apex of the ovary.
Spikelets borne in one-sided fascicles which are arranged in a glomerate or interrupted panicle; lemma herbaceous. 61. DACTYLIS.
Spikelets borne in panicles or racemes.
Glumes more or less compressed and keeled.
Spikelets cordate, large. 62. BRIZA.
Spikelets not cordate.
Plants dioecious; lemma of the pistillate spikelets coriaceous; palet strongly 2-keeled and serrate on the margin. 63. DISTICHLIS.
Plants with perfect flowers or in some species of *Poa* dioecious; spikelets all alike; lemma thin; palet ciliate or smooth on the margin.
Lemma scarious-margined; rachis glabrous or with webby hairs. 64. POA.
Lemma membranous, not scarious-margined; rachis with stiff hairs, extending into a hairy appendage. 35. GRAPHEPHORUM.
Glumes rounded on the back, at least below.
Lemma with a basal ring of hairs, prominently 7-nerved, toothed at the apex. 65. SCOLOCHLOA.
Lemma naked at the base.
Lemma obtuse or acutish and scarious at apex, usually toothed.
Lemma distinctly 5–7-nerved; style present. 66. PANICULARIA.
Lemma obscurely 5-nerved; style none. 67. PUCCINELLIA.
Lemma acute, pointed or more commonly awned at apex.
Stigmas bilaterally plumose; flowers hermaphrodite. 68. FESTUCA.
Stigmas subplumose, the branches arising on all sides; plant dioecious. 69. HESPEROCHLOA.
Stigmas plainly arising below the apex of the ovary which is tipped by a hairy cushion. 70. BROMUS.

TRIBE 10. HORDEAE.

Spikelets usually single at the nodes of the rachis.
Empty glumes broad, with their sides turned to the rachis.

Glumes broad, several-toothed or several-awned. 73. TRITICUM.
Glumes not toothed, 1-awned or awnless.
Perennials; spikelets several-flowered. 72. AGROPYRON.
Annuals or biennials; spikelets 2-flowered. 74. SECALE.
Empty glumes with their back turned to the rachis. 71. LOLIUM.
Spikelets 2–6 at each node of the rachis, or if solitary the empty glumes arranged obliquely to the rachis.
Spikelets 1-flowered or with a rudimentary second flower. 75. HORDEUM.
Spikelets 2-many-flowered.
Rachis of spikes articulated, readily breaking up into joints. 76. SITANION.
Rachis of spikes continuous, not breaking up into joints.
Empty glumes well developed. 77. ELYMUS.
Empty glumes wanting or reduced to short bristles. 78. HYSTRIX.

1. SCHIZACHÝRIUM Nees. BEARD-GRASS, BUNCH-GRASS. 1. *S. scoparium.*

2. AMPHILÒPHIS Nash. BEARD-GRASS. 1. *A. saccharoides.*

3. ANDROPÒGON (Royen) L. BLUESTEM, BEARD-GRASS.

Lemma of the sessile spikelets with a long geniculate awn, more or less spiral at the base.
Outer two glumes of the sessile spikelets more or less hispidulous all over; hairs of the rachis-internodes usually 2 mm. long or less, mostly white. 1. *A. provincialis.*
Outer two glumes of the sessile spikelets smooth or nearly so, except on the nerves; hairs of the rachis-internodes 3–4 mm. long, usually yellow. 2. *A. chrysocomus.*
Lemma of the sessile spikelets awnless or with a short straight untwisted awn.
Marginal hairs of the pedicels and rachis-internodes copious, stiff. 3. *A. Hallii.*
Marginal hairs of the pedicels and rachis-internodes scant, lax, crisp, or almost wanting. 4. *A. paucipilus.*

4. SORGHÁSTRUM Nash. INDIAN GRASS. 1. *S. nutans.*

5. HÓLCUS L JOHNSON GRASS, BROOM CORN, SUGAR CORN. 1. *H. halapense.*

6. PLEURÀPHIS Torr. BLACK BUNCH-GRASS, GALLETA GRASS, TOBOSA GRASS.

Stem and leaf-sheath, at least the lower ones, densely woolly. 1. *P. rigida.*
Stem and leaf-sheath not woolly.
Outer glumes of the spikelets cuneate, awnless; nerves strongly divergent. 2. *P. mutica.*
Outer glumes linear or oblong, awned; nerves parallel. 3. *P. Jamesii.*

7. PÁSPALUM L. PASPALUM. 1. *P. stramineum.*

8. SYNTHERÍSMA Walt. CRAB-GRASS.

Pedicels terete or nearly so, sparingly if at all hispidulous; lower sheaths glabrous; lemma brown in fruit.
Spikelets more than 2 mm. long. 1. *S. Ischaemum.*
Spikelets 1.25–1.5 mm. long. 2. *S. paniceum.*
Pedicels sharply 3-angled, the angles strongly hispidulous, as also the sheath; lemma white in fruit.
Spikelets about 2.5 mm. long; third glume with the nerves strongly hispid above the middle. 3. *S. sanguinale.*
Spikelets 3 mm. long or more; third glume with the nerves smooth or nearly so. 4. *S. marginatum.*

9. VALLÒTA Chase. 1. *V. saccharata.*

10. PÁNICUM L. PANIC-GRASS, WITCH-GRASS.

Inflorescence truly paniculate.
Basal leaf-blades long and narrow; spikelets lanceolate or ovate, acute or acuminate.
Annuals.
Branches of the panicle widely spreading, the well developed pulvinus in their axils long-hairy; spikelets lanceolate, acuminate. 1. *P. barbipulvinatum.*
Branches of the panicle ascending, rarely spreading, the pulvinus glabrous or sparingly hairy; spikelets ovate to ellipsoid, acute. 2. *P. capillare.*
Perennials, with long scaly rootstocks and stolons. 3. *P. virgatum.*
Basal leaf-blades ovate to lanceolate, obtuse.
Spikelets less than 2 mm. long.
Stem and sheaths sparingly pubescent, with spreading papillate hairs.
Vernal leaves glabrous or nearly so on the upper side.
Autumnal stems branching from the lower nodes, forming a spreading bunch, 1–1.5 dm. high. 4. *P. occidentale.*
Autumnal stems branching from the middle nodes, forming widely spreading mats. 5. *P. tennesseense.*
Vernal leaves pubescent on the upper side, especially towards the base.
Spikelets 1.8–2 mm. long; autumnal form decumbent-spreading. 6. *P. pacificum.*
Spikelets 1.6–1.8 mm. long; autumnal form not decumbent-spreading. 7. *P. Huachucae.*

Stem and sheaths densely soft-pubescent; hairs scarcely papillate. 8. *P. thermale.*
Spikelets more than 2 mm. long.
Blades of stem-leaves elongated, narrowly linear
Spikelets glabrous or with a few scattered hairs; stem branching only at the base. 9. *P. perlongum.*
Spikelets densely pubescent; stem branching above. 10. *P. Wilcoxianum.*
Blades of stem-leaves lanceolate. 11. *P. Scribnerianum.*
Inflorescence with racemiform branches. 12. *P. obtusum.*

11. ECHINÓCHLOA Beauv. Barnyard Grass, Jungle Rice. 1. *E. Crus-galli.*

12. CHAETÓCHLOA Scribn. Foxtail Grass.

Inflorescence with the spikelets racemosely arranged; bristles 5–16 at the base of each spikelet, involucrate, tawny-orange. 1. *C. glauca.*
Inflorescence with the spikelets in clusters on the branches; bristles 1–3 at the base of each spikelet, not involucrate.
Second glume of the spikelet as long as the lemma, or very nearly so; annuals.
Panicle usually 1 cm. thick or less; bristles commonly green; spikelets about 2 mm. long. 2. *C. viridis.*
Panicle usually 1–3 cm. thick; bristles usually purple; spikelets 2.5–3 mm. long. 3. *C. italica.*
Second glume manifestly shorter than the lemma; perennials. 4. *C. composita.*

13. CÉNCHRUS L. Bur-grass, Sandbur, Sandspur. 1. *C. carolinianus.*

14. HOMALOCÉNCHRUS Mieg. Rice Cut-grass. 1. *H. oryzoides.*

15. PHÁLARIS L. Canary-grass.

Outer glumes not winged; inflorescence a narrow panicle. 1. *P. arundinacea.*
Outer glumes winged; inflorescence a spike or spike-like panicle.
Spikelets narrow; third and fourth glumes much reduced; blades subulate-linear, hairy. 2. *P. caroliniana.*
Spikelets broad; third and fourth glumes thin, membranous; blades lanceolate, glabrous, rarely sparingly hairy. 3. *P. canariensis.*

16. TORRÈSIA R. & P. Sweet Grass, Holy Grass. 1. *T. odorata.*

17. ARÍSTIDA L. Poverty Grass, Wire-grass.

Awns neither twisted nor bent.
Panicle narrow; branches erect or ascending.
First glume much shorter than the second.
Spikelets not crowded, usually 1–3, on branches naked at the base; awn over 2 cm. long; perennials.
Second glume of the spikelets 2 cm. long or more, 1.5–2 times as long as the lemma. 1. *A. longiseta.*
Second glume of the spikelets 1.5 cm. long or less, scarcely exceeding the lemma. 2. *A. Fendleriana.*
Spikelets crowded, 4–6 on the short branches, spikelet-bearing to near the base; awn less than 2 cm. long; annuals.
Stem 3–6 dm. high; first glume 7–8 mm. long; middle awn 10–16 mm. long leaf-blades usually flat. 3. *A. fasciculata.*
Stem 1–3 dm. high; first glume 4–6 mm. long; middle awn 6–8 mm. long; leaf-blades strongly involute. 4. *A. bromoides.*
First glume nearly equalling the second; perennials with a dense panicle. 7. *A. arizonica.*
Panicle open; branches 3-forked, divergent. 5. *A. Humboldtiana.*
Middle awn twisted and divaricately bent near the base. 6. *A. Curtissii.*

18. STÌPA L. Spear Grass, Porcupine Grass, Devil's Darning-needles, Feather Grass.

Outer glume of the spikelet 2 cm. long or more.
Awn plumose. 1. *S. neo-mexicana.*
Awn not plumose.
Base of the panicle exserted; lemma more than 12 mm. long; awn straight above the bend.
Lemma 20–25 mm. long. 2. *S. spartea.*
Lemma 12–15 mm. long. 3. *S. Tweedyi.*
Base of the panicle usually included in the upper sheath; lemma 8–12 mm. long; awn slender and curled above the bend. 4. *S. comata.*
Outer glume of the spikelet 1.5 cm. long or less.
Panicle loose and open; branches spreading or reflexed.
Awn plumose. 5. *S. Porteri.*
Awn not plumose.
Callus acute; lemma 7–8 mm. long. 6. *S. Richardsonii.*
Callus short, blunt; lemma about 4 mm. long. 7. *S. canadensis.*
Panicle dense and spike-like.
Awn glabrous, scabrous, or strigose, not plumose.

Lemma long-hairy towards the apex.
Lemma about 5 mm. long.
Glumes green, rarely slightly tinged with purple; lemma nearly glabrous below. 8. *S. Lettermanii.*
Glumes purplish with paler margins; lemma pubescent throughout, though more densely so above. 9. *S. pinetorum.*
Lemma about 8 mm. long. 10. *S. Scribneri.*
Lemma equally hairy throughout.
Sheaths glabrous.
Empty glumes scarious or hyaline; their nerves hence prominent.
Lemma 4–6 mm. long, spindle-shaped when mature; callus short.
Stem-leaves broader than the basal leaves, often flat; sheaths with a ring of hairs at the throat. 11. *S. viridula.*
Stem-leaves as well as the basal leaves very narrow, involute; sheaths glabrous.
Plant green; sheaths close; inflorescence distinctly exserted. 12. *S. columbiana.*
Plant pale and glaucous; sheaths loose; inflorescence included or barely exserted; awn glabrous. 13. *S. arida.*
Lemma 6–7 mm. long, almost cylindric; callus long and pointed. 14. *S. Nelsonii.*
Empty glumes firm, thickish, herbaceous; the nerves not prominent.
Lemma about 5 mm. long; leaf-blades narrow and involute. 15. *S. minor.*
Lemma 8–10 mm. long; leaf-blades broad.
Panicle slender; stem low and slender. 9. *S. Scribneri.*
Panicle stout and dense; stem tall and stout. 16. *S. Vaseyi.*
Sheaths and lower leaf-blade pubescent. 17. *S. Williamsii.*
Awns plumose or subplumose at least below.
Hairs of the awns less than 1 mm. long; empty glumes 10–12 mm. long.
Ligules 1 mm. long or less.
Sheaths, at least the lower ones, hairy. 18. *S. Elmeri.*
Sheaths glabrous. 19. *S. oregonensis.*
Ligules 2–4 mm. long. 20. *S. Thurberiana.*
Hairs of the awns 3–6 mm. long; empty glumes 15–18 mm. long. 21. *S. speciosa.*

19. **ORYZÓPSIS** Michx. Mountain Rice.

Lemma glabrous, or pubescent with short appressed hairs.
Spikelets, exclusive of the awn, 2.5–5 mm. long; leaves slender and involute.
Awn less than 2 mm. long, much shorter than the glume; outer glumes 3–4 mm. long. 1. *O. pungens.*
Awn 4–8 mm. long, much longer than the glume.
Inflorescence very narrow, with short erect branches; outer glumes 3–5 mm. long. 2. *O. exigua.*
Inflorescence at length open, with long spreading or reflexed branches; outer glume about 2.5 mm. long. 3. *O. micrantha.*
Spikelets, exclusive of the awn, 6–8 mm. long; leaves broad and usually flat. 4. *O. asperifolia.*

Lemma with long loose hairs.
Inflorescence open; plant 3–6 dm. high. 5. *O. Bloomeri.*
Inflorescence narrow and spike-like; plant 1–3 dm. high. 6. *O. Webberi.*

20. **ERIOCÒMA** Nutt. Indian Millet, Wild Rice. 1. *E. hymenoides.*

21. **MUHLENBÉRGIA** Schreb.

Panicle contracted, narrow, spike-like, the short branches rarely spreading.
Empty glumes awl-shaped; leafy and branched plants, with long rootstocks covered by imbricated scales.
Lemma not awned; basal hairs not equalling the lemma.
Empty glumes about equalling the lemma in length, sharp-pointed, about 3 mm. long. 1. *M. mexicana.*
Empty glumes exceeding the lemma, generally twice as long, awned, about 5 mm. long. 2. *M. racemosa.*
Lemma distinctly awned; basal hairs equalling the lemma. 3. *M. comata.*
Empty glumes lanceolate to ovate.
Second glume not toothed or slightly so.
Lemma awnless or rarely very short-awned.
Empty glumes more than half as long as the lemma.
Plant 1.5–7 dm. high; sheaths close; empty glumes acuminate, lanceolate.
Lemma scabrous, green or dark.
Panicle dense, obtuse, 5–10 mm. wide. 4. *M. Wrightii.*
Panicle slender and lax, attenuate at the apex, less than 5 mm. wide. 5. *M. cuspidata.*
Lemma more or less purplish, sparingly long-hairy. 6. *M. Thurberi.*
Plant less than 1.2 dm. high; sheaths loose; lower leaves lanceolate, short, squarrose; empty glumes ovate, acute. 7. *M. squarrosa.*
Empty glumes less than half as long as the lemma, obtuse or abruptly acute.
Spikelets (excluding the awn if present) 1.5 mm. or more long.
Plant with a strong perennial, scaly rootstock.

Empty glumes less than one-fourth as long as the lemma; stem diffuse, decumbent or creeping; plant not tufted. 8. *M. Schreberi.*
Empty glumes one-third as long as the lemma or longer; stem erect or decumbent at the base only; plant tufted. 9. *M. Richardsonis.*
Plant annual; rootstock, if any, very slender.
Lemma merely awn-pointed, decidedly purplish; plant 1–2 dm. high.
Spikelets 2 mm. long or more; inflorescence short and rather dense; stem 0.5–1 mm. thick. 10. *M. simplex.*
Spikelets about 1.5 mm. long; inflorescence slender and lax; stem very slender, filiform. 11. *M. filiformis.*
Lemma with a distinct awn 0.5–1 mm. long, greenish; plant 4–6 cm. high. 12. *M. aristata.*
Spikelets about 1 mm. long; plant less than 4 cm. high, annual. 13. *M. Wolfii.*
Lemma long-awned.
Leaf-blades erect, glabrous or minutely scabrous; stem and sheaths glabrous.
Lemma glabrous; rootstock short and woody. 14. *M. pauciflora.*
Lemma pubescent on the lower half; rootstock slender, creeping, branched. 15. *M. polycaulis.*
Leaf-blades spreading, as well at the stem below the nodes and the sheaths scabrous-puberulent; lemma pubescent on the lower half; rootstock creeping. 16. *M. curtifolia.*
Second glume sharply 3–5-toothed; flowering glume long-awned; awn at least one-half as long as the glume.
Stem 3–6 dm. high, leafy; panicle 7–12 cm. long; awn 8–15 mm. long. 17. *M. gracilis.*
Stem 1–3 dm. high, almost naked above; panicle 3–7 cm. long; awn 1–4 mm. long.
Spikelets 3–4 mm. long; awn 2–4 mm.; leaf-blades usually stiff. 18. *M. subalpina.*
Spikelets about 2 mm. long; awn 1–2 mm.; leaf-blades filiform. 19. *M. filiculmis.*
Panicle open, its branches long and spreading.
Plants densely cespitose, branched only at the bse.
Secondary branches of the panicle single; bsal leaves short, strongly recurved. 20. *M. gracillima.*
Secondary branches of the panicle fascicled; basal leaves not recurved. 21. *M. pungens.*
Plants diffusely branched, prostrate. 22. *M. Porteri.*

22. LYCÙRUS H.B.K. Texas Timothy. 1. *L. phleoides.*

23. PHLÈUM L. Timothy.

Spikes usually elongated-cylindric; awns less than one-half the length of the outer glumes. 1. *P. pratense.*
Spikes short, ovoid or oblong; awns about one-half the length of the outer glumes. 2. *P. alpinum.*

24. ALOPECÙRUS L. Foxtail.

Awn about twice as long as the lemma.
Spikes 8–12 mm. thick; empty glumes 3.5–4.5 mm. long, abruptly acuminate. 1. *A. occidentalis.*
Spike about 5 mm. thick; empty glumes about 3 mm. long, obtuse.
Stem erect, 3–5 dm. high, slightly if at all geniculate at the base, pale; ligules 4–5 mm. long, acutish. 2. *A. pallescens.*
Stem decumbent, and geniculate at the base, 1–1.5 dm. high; ligules 2 mm. long, obtuse. 3. *A. Macounii.*
Awn scarcely exceeding the lemma.
Stem erect, 1.5–5 dm. high; spike cylindric, obtuse. 4. *A. aristulatus.*
Stem geniculate at the base, 1–5 cm. high; spike oblong, acute. 5. *A. caespitosus.*

25. PHÍPPSIA R. Br. 1. *P. algida.*

26. BLEPHARONEÙRON Nash. 1. *B. tricholepis.*

27. SPORÓBOLUS R. Br. Drop-seed, Rush-grass.

Perennials.
First glume one-half as long as the second or less; plants not with long, scaly roosstocks.
Branches of the panicle verticillate. 1. *S. argutus.*
Branches of the panicle scattered.
Spikelets about 2 mm. long; first glume lanceolate.
Sheath naked or sparingly ciliate at the throat; empty glumes glabrous.
Plant 3 dm. high or less; spikelets long-pedicelled; sheaths sparingly villous. 9. *S. texanus.*
Plant 5–10 dm. high; spikelets short-pedicelled; sheaths glabrous. 2. *S. airoides.*
Sheath with a conspicuous tuft of hairs at the throat; empty glumes scabrous on the keel.
Leaf-blades widely spreading, involute; sheath pubescent with long hairs, at least towards the base. 3. *S. Nealleyi.*

Leaf-blades not widely spreading; sheaths glabrous, except the apex, and slightly on the margins.
Panicle narrow and spike-like. 4. *S. strictus.*
Panicle not spike-like.
Panicle always exserted, oblong, comparatively narrow; its lower branches but little, if any, exceeding the upper ones. 5. *S. flexuosus.*
Panicle usually more or less included in the sheath; its lower branches much exceeding the upper ones. 6. *S. cryptandrus.*
Spikelets 4.5–5 mm. long; first glume subulate, usually awned. 7. *S. heterolepis.*
First glume almost equalling the second; plants with long, scaly rootstocks. 8. *S. asperifolius.*
Annuals; empty glumes almost equal, ovate. 10. *S. confusus.*

28. POLYPÒGON Desf. Beard-grass. 1. *P. monspeliensis.*

29. CÍNNA L. Reed-grass. 1. *C. latifolia.*

30. AGRÓSTIS L. Red-top, Bent-grass, Tickle-grass.

Rachilla prolonged above the palet, naked or minutely pubescent; lemma equalling the empty glumes; palet nearly as long.
Spikelets about 3 mm. long, purple; rachilla one-third to one-half as long as the flower. 1. *A. aequivalvis.*
Spikelets about 2 mm. long; rachilla less than one-third as long as the flower.
Empty glumes dark purple, broadly lanceolate, abruptly acute or acuminate; inflorescence short and open; stem few-leaved. 2. *A. atrata.*
Empty glumes green, only tinged with purple towards the tip, narrowly lanceolate, gradually acute; inflorescence long and narrow; stem leafy. 3. *A. Thurberiana.*
Rachilla not prolonged above the palet; lemma shorter than the empty glumes.
Palet evident, 2-nerved, at least one-fourth as long as the lemma.
Empty glumes obtuse, scabrous on the back; panicle dense; branches flower-bearing from the base, verticillate. 4. *A. stolonifera.*
Empty glumes acute or acuminate, glabrous or scabrous on the keel only.
Plant erect or decumbent at the base, but not extensively stoloniferous.
Plant tall, usually over 3 dm. high; panicle large, open; spikelets over 2 mm. long. 5. *A. alba.*
Plant low, slender, 1–3 dm. high; panicle narrow; spikelets about 2 mm. long or less.
Lemma nearly as long as the empty glumes; palet about two-thirds as long as the lemma; plant erect. 6. *A. humilis.*
Lemma one-third shorter than the empty glumes; palet about one-half as long as the lemma; plant decumbent at the base. 7. *A. depressa.*
Plant extensively stoloniferous; stolons with short leaves; palet one-fourth to one-half as long as the lemma. 8. *A. reptans.*
Palet lacking or minute.
Plant with creeping rootstock. 9. *A. foliosa.*
Plant tufted, without creeping rootstock.
Panicle dense and narrow; branches ascending or erect, flower-bearing to near the base.
Plant over 3 dm. high; empty glumes 2.5–3 mm. long.
Panicle lobed or interrupted; branches densely verticillate and flower-bearing to the base; empty glumes narrowly lanceolate, gradually attenuate; ligules 4–5 mm. long, lacerate; leaf-blades 6–10 mm. wide. 10. *A. grandis.*
Panicle usually contiguous; branches few and some naked at the base; empty glumes lanceolate, abruptly pointed; ligules 2–4 mm. long, entire or toothed; leaf-blades 2–5 mm. wide. 11. *A. asperifolia.*
Plant 1–2 dm. high; empty glumes 2 mm. long or less.
Basal leaf-blades flat, 2 mm. wide; lemma two-thirds as long as the empty glumes, obtuse. 12. *A. Rossae.*
Basal leaf-blades 1 mm. wide or less, conduplicate; lemma three-fourths as long as the empty glumes, acute. 13. *A. variabilis.*
Panicle open; branches more or less spreading, or sometimes reflexed.
Lemma awnless or with a very short awn.
Panicle oblong-ovoid, its branches ascending.
Plant 1–4 dm. high; empty glumes unequal, 1.5–2 mm. long. 14. *A. idahoensis.*
Plant 3–6 dm. high; empty glumes equal or nearly so, 3 mm. long. 15. *A. oregonensis.*
Panicle triangular-ovoid or broadly conic; branches at least in age divaricate or even reflexed.
Leaf-blades filiform, 1 mm. wide or less, usually involute; the basal ones numerous; upper sheaths close. 16. *A. oreophila.*
Leaf-blades usually flat, 1–3 mm. wide; upper sheaths loose. 17. *A. hyemalis.*
Lemma awned; awn equalling or exceeding the glume.
Panicle open, diffuse; branches spreading or ascending.
Leaf-blades about 0.5 mm. wide; panicle broadly conic; branches very scabrous, in age spreading or reflexed. 18. *A. geminata.*
Leaf-blades 1–2 mm. wide; panicle ovoid; branches ascending. 19. *A. Bakeri.*
Panicle narrow; branches nearly erect. 20. *A. melaleuca.*

31. CALAMAGRÓSTIS Adans. Reed-grass.

Awn of the lemma geniculate, exserted; callus-hairs usually much shorter than the glume.
- Awns of the lemma greatly exceeding the empty glumes; plant tufted; leaf-blades involute.
  - Empty glumes very scabrous throughout; marcescent basal leaf-sheaths very long, loose and numerous. 1. *C. purpurascens.*
  - Empty glumes nearly glabrous, except on the keels; marcescent basal leaf-sheaths short and few. 2. *C. Vaseyi.*
- Awns of the lemma about equalling the empty glumes.
  - Empty glumes sharply keeled; spikelets strongly compressed; plant stoloniferous. 3. *C. montanensis.*
  - Empty glumes not strongly keeled; spikelets not strongly conpressed; plants tufted.
    - Leaves usually involute; panicle very dense.
      - Panicle very narrow, spike-like, usually red-purplish. 4. *C. rubescens.*
      - Panicle lance-oblong, usually pale green. 5. *C. Suksdorfii.*
    - Leaves usually flat; panicle ovoid, open. 6. *C. luxurians.*

Awn of the lemma straight or nearly so, included; callus-hairs usually equalling the lemma (except in *C. scopulorum* and *C. Cusickii*).
- Panicle open, the lower branches spreading; leaf-blades usually flat; callus-hairs nearly or quite equalling the lemma.
  - Empty glumes 4–6 mm. long, narrow, sharp-acuminate; awn of the lemma attached below the middle, exceeding the lemma. 7. *C. Langsdorfii.*
  - Empty glumes 2–4 mm. long; awn of the lemma attached at or above the middle, shorter than the lemma.
    - Awn attached near the middle of the lemma; spikelets usually purple.
      - Spikelets 3–4 mm. long; panicle loosely flowered. 8. *C. canadensis.*
      - Spikelets 2–2.5 mm. long; panicle densely flowered. 9. *C. Macouniana.*
    - Awn attached near the apex of the lemma; spikelets pale or white. 10. *C. blanda.*
- Panicle more or less contracted.
  - Leaf-blades flat or nearly so.
    - Empty glumes smooth or nearly so, except on the veins.
      - Callus-hairs copious, at least two-thirds as long as the lemma; plant with a rootstock. 11. *C. Scribneri.*
      - Callus-hairs sparse, much shorter than the lemma.
        - Plant tall, 9–12 dm. high; sheaths bearded at the summit; plant with a rootstock. 12. *C. Cusickii.*
        - Plant lower, 3–8 dm. high; sheaths not bearded; plant tufted. 13. *C. scopulorum.*
    - Empty glumes very scabrous; plant tufted. 14. *C. elongata.*
  - Leaf-blades strongly involute.
    - Panicle open. 15. *C. lucida.*
    - Panicle dense, narrow, spike-like.
      - Spikelets 2 mm. long; empty glumes thickish, barely acute or obtusish. 16. *C. micrantha.*
      - Spikelets 3–4.5 mm. long.
        - Plant scarcely cespitose; empty glumes long-acuminate.
          - Leaves filiform, soft; plant 4–6 dm. high, slender; empty glumes minutely scabrous on the veins. 17. *C. neglecta.*
          - Leaves stiff and hard; plant 8–12 dm. high; empty glumes strongly scabrous. 18. *C. inexpansa.*
        - Plant densely cespitose; empty glumes abruptly acute or short-acuminate, very scabrous. 19. *C. americana.*

32. CALAMOVÍLFA Hack. Reed-grass, Sand-grass. 1. *C. longifolia.*

33. DESCHÁMPSIA Beauv. Hair-grass.

Empty glumes not extending beyond the apex of the upper lemma; lower empty glume 1-nerved; densely cespitose tufted perennials.
- Leaves neither stiff nor pungent.
  - Awn inserted one-third to one-fifth from the base of the lemma; branches of the inflorescence at last spreading or reflexed.
    - Awns long-exserted, at least half longer than the lemma.
      - Empty glumes 3–4 mm. long; leaves filiform, revolute, scarcely 1 mm. wide; plant 2–3 dm. high. 1. *D. curtifolia.*
      - Empty glumes 4–5 mm. long; leaves broader and often flat, 1.5–2.5 mm. wide; plant 3–5 dm. high. 2. *D. alpicola.*
    - Awns scarcely exserted beyond the lemma. 3. *D. caespitosa.*
  - Awn inserted near the base of the lemma, slightly if at all exceeding it; branches of the inflorescence ascending. 4. *D. confinis.*
- Leaves arcuate, strongly involute, very stiff and pungent. 5. *D. pungens.*

Empty glumes extending beyond the apex of the upper lemma.
- Spikelets usually dark purple; empty glumes lanceolate, purple, about 5 mm. long, the lower 1-nerved. 6. *D. atropurpurea.*
- Spikelets light green; empty glumes linear-lanceolate, both 3-nerved.
  - Spikelets 3–5 mm. long; tufted perennials.
    - Leaves filiform-involute; sheaths close; spikelets 3–4 mm. long. 7. *D. elongata.*
    - Leaves involute but not filiform, or the stem-leaves flat; upper sheaths loose; spikelets 4–5 mm. long. 8. *D. ciliata.*
  - Spikelets 5–8 mm. long; annuals. 9. *D. calycina.*

34. TRISÈTUM Pers. False Oat.

Inflorescence lanceolate, open; lower empty glume shorter than and scarcely more than half as broad as the upper; leaf-blades broader than the sheaths and therefore with auricles at the base.
Lemma about 7 mm. long; sheaths hairy. 1. *T. canescens.*
Lemma about 5 mm. long; sheaths glabrous.
Ovary pubescent at the apex; panicle loose; its branches spikelet-bearing above the middle. 2. *T. cernuum.*
Ovary glabrous; panicle denser; its branches spikelet-bearing to the base. 3. *T. montanum.*
Inflorescence dense, oblong or oblong-lanceolate; lower empty glume nearly as broad as the upper; leaf-blades not broader than the sheaths, not auricled.
Leaf-sheaths and blades long-hairy; upper part of the stem densely pubescent. 4. *T. subspicatum.*
Leaf-sheaths and blades glabrous or the lowest sheath short-pubescent, with reflexed hairs; stem glabrous or slightly scabrous in the inflorescence. 5. *T. majus.*

35. GRAPHÉPHORUM Desv.

Empty glumes nearly equal; inflorescence narrow.
Sheaths and upper surface of the leaves pubescent; spikelets 3-flowered. 1. *G. muticum.*
Sheaths and leaves scabrous.
Empty glumes barely equalling the lemma; spikelets 2-flowered; rudiment long-hairy. 2. *G. Wolfii.*
Empty glumes longer than the lemma; spikelets 3–4-flowered; rudiment short-hairy. 3. *G. Brandegei.*
Empty glumes unequal; inflorescence open. 4. *G. Shearii.*

36. AVÈNA (Tourn.) L. Oats.

Perennials, with rootstocks; empty glumes 5–12 mm. long; lemma hairy at the base.
Empty glumes shorter than the flowers; panicle lax, narrow, and somewhat nodding; plant not tufted. 1. *A. striata.*
Empty glumes longer than the flowers; panicle narrow and spike-like, strict; plant tufted.
Plant 1–1.5 dm. high; leaves strongly involute; callus of the lemma and prolongation of the rachilla long-hairy. 2. *A. Mortoniana.*
Plant 2–4 dm. high; leaves mostly flat; callus and rachilla short-hairy. 3. *A. Hookeri.*
Annuals; panicle open; empty glumes over 2 cm. long; spikelets 2–4-flowered.
Lemma hairy, at least at the base; awn strongly twisted. 4. *A. fatua.*
Lemma glabrous; awn scarcely twisted. 5. *A. sativa.*

37. ARRHENÁTHERUM Beauv. Oat-grass. 1. *A. elatius.*

38. DANTHÒNIA DC. Wild Oat-grass.

Lemma hairy on the back; inflorescence spike-like, with short, erect branches.
Empty glumes 15–20 mm. long, long-acuminate. 1. *D. Parryi.*
Empty glumes 8–13 mm. long, acute.
Empty glumes 11–13 mm. long, conspicuously nerved, broad; teeth of the lemma subulate, 1–2 mm. long. 2. *D. thermalis.*
Empty glumes 8–10 mm. long, narrow; teeth of the lemma ovate, often only 0.5 mm. long. 3. *D. spicata.*
Lemma glabrous on the back.
Empty glumes acute; inflorescence spike-like, with erect branches; stem-leaves erect. 4. *D. intermedia.*
Empty glumes long-acuminate; inflorescence racemiform or spikelet solitary; stem-leaves spreading or ascending.
Lemma abruptly acuminate; spikelets usually 2–10, on spreading peduncles. 5. *D. californica.*
Lemma not abruptly acuminate; spikelet usually solitary, if more than one, the peduncles erect. 6. *D. unispicata.*

39. SPARTÌNA Schreb. Marsh-grass.

First glume awn-pointed, equalling the lemma; second glume long-awned. 1. *S. pectinata*
First glume acute, shorter than the lemma; second glume acute. 2. *S. gracilis.*

40. BECKMÁNNIA Host. Slough Grass. 1. *B. crucaeformis.*

41. SCHEDONNÀRDUS Steud. 1. *S. paniculatus.*

42. CHLÒRIS Sw. 1. *C. brevispica.*

43. BOUTELOÙA Lag. Grama, Grama Grass, Mesquite Grass, Buffalo Grass

Spikes 1–4, rarely more; spikelets 25 or more.
Spikes usually more than one.
Awns manifestly arising from between the lobes of the lemma; annual. 1. *B. polystachya.*
Awns terminating the lobes of the lemma; cespitose tufted perennials.
Stem densely villous below. 2. *B. eriopoda.*

Stem glabrous.
Rachilla bearing the rudimentary glumes and awns glabrous; second glume strongly papillose-hispid on the keel. 3. *B. hirsuta.*
Rachilla bearing the rudimentary glumes and awns with a tuft of lgon hairs at the apex; second glume scabrous and sparingly long-ciliate on the keel. 4. *B. gracilis.*
Spike solitary; tufted annual. 5. *B. procumbens.*
Spikes 12 or more; spikelets in each few, less than 12. 6. *B. curtipendula.*

44. LEPTÓCHLOA Beauv. 1. *L. filiformis.*

45. BÚLBILIS Raf. BUFFALO GRASS. 1. *B. dactyloides.*

46. SCLEROPÒGON Philippi. 1. *S. Karwinskyanus.*

47. PHRAGMÌTES Trin. REED, CANE-GRASS. 1. *P. Phragmites.*

48. MUNRÒA Torr. FALSE BUFFALO GRASS. 1. *M. squarrosa.*

49. BLEPHARIDÁCHNE Hack. 1. *B. Kingii.*

50. TRIPLÀSIS Beauv. SAND-GRASS. 1. *T. purpurea.*

51. DASYÓCHLOA Willd. 1. *D. pulchella.*

52. ERIONEÙRON Nash. 1. *E. pilosum.*

53. TRÌDENS R. & S.

Second empty glume 1-nerved. 1. *T. muticus.*
Second empty glume 3–5-nerved. 2. *T. elongatus.*

54. DIPLÁCHNE Beauv. 1. *D. acuminata.*

55. REDFIÈLDIA Vasey. BLOW-OUT GRASS, SAND-GRASS. 1. *R. flexuosa.*

56. KOELÈRIA Pers. JUNE GRASS. 1. *K. gracilis.*

57. ERAGRÓSTIS Beauv. STINK-GRASS, SKUNK-GRASS.

Plant extensively creeping, rooting at the nodes; plant dioecious. 1. *E. hypnoides.*
Plant not creeping, not rooting at the nodes; flowers perfect.
Annuals, much branched, ascending or decumbent and geniculate at the base.
Spikelets about 3 mm. broad; first empty glume only slightly shorter than the second. 2. *E. megastachya.*
Spikelets 1.5–2 mm. broad; first empty glume only two-thirds as long as the second.
Inflorescence open; branches at last more or less spreading; spikelets dark green or lead-colored. 3. *E. Purshii.*
Inflorescence narrow; branches erect or strongly ascending; spikelets light yellowish green. 4. *E. lutescens.*
Perennials, rigid, erect, often tufted.
Spikelets scattered on the long branches.
Branches of the panicle widely spreading in age. 5. *E. pectinacea.*
Branches of the panicle erect or strongly ascending.
Spikelets 3–9-flowered, on pedicels much longer. 6. *E. trichodes.*
Spikelets 8–15-flowered, on pedicels scarcely as long. 7. *E. neo-mexicana*
Spikelets clustered on short branches. 8. *E. secundiflora.*

58. CATABRÒSA Beauv. BROOK-GRASS. 1. *C. aquatica.*

59. SPHENÓPHOLIS Scribn.

Second empty glume much wider than the lemma, rounded or truncate and somewhat cucullate at the apex.
Intermediate nerves of the second glume almost as prominent as the lateral ones; leaf-blades firm, much broader than the sheaths and therefore with prominent auricles. 1. *S. robusta.*
Intermediate nerves of the second glume faint, the lateral ones strong; leaf-blades soft, not much wider than the sheaths; auricles not prominent. 2. *S. obtusata.*
Second empty glume oblanceolate, not much wider than the lemma, obtuse or acute.
Second empty glume rather firm, as well as the lemma obtusish. 3. *S. intermedia.*
Second empty glume thin and with a broad, scarious margin, acutish; lemma acute. 4. *S. pallens.*

60. MÉLICA L. MELIC-GRASS.

Lemma notched at the apex, awned. 1. *M. Smithii.*
Lemma neither notched nor awned.
Lemma attenuate at the apex.
First empty glume 4 mm. long; second 5–6 mm. long. 2. *M. subulata.*
First empty glume 6 mm. long; second about 8 mm. long. 3. *M. Pammelii.*

Lemma obtuse.
Stem bulbous at the base.
Panicle narrow; lemma 7–8 mm. long.
Spikelets usually nodding, flattened; second empty glume shorter than the first flower. 4. *M. spectabilis.*
Spikelets erect, terete; second empty glume as long as the first flower. 5. *M. bella.*
Panicle open; lemma 6 mm. long. 6. *M. Macbridei.*
Stem not bulbous at the base. 7. *M. Porteri.*

61. DÁCTYLIS L. Orchard-grass. 1. *D. glomerata.*

62. BRÌZA L. Quaking Grass, Quake-grass. 1. *B. maxima.*

63. DISTÍCHLIS Raf. Alkali Grass, Salt-grass, Spike-grass.

Pistillate spikes 4–5 mm. wide; their floral glumes about 1.5 mm. wide in side-view; palet scabrous-ciliate on the keels; leaf-blades 2 mm. wide or less. 1. *D. stricta.*
Pistillate spikes 5–8 mm. wide; their floral glumes about 2 mm. wide in side-view; palet distinctly dentate on the margins; leaf-blades usually over 2 mm. wide. 2. *D. dentata.*

64. PÒA L. Blue-grass, Meadow-grass.

Annuals, but tufted; spikelets 3–5-flowered. I. Annuae.
Perennials.
Cobweb at the base of the lemma present, although scant in some species; lemma acute or acutish, except in *P. compressa* and *P. lanata*, and usually strongly keeled.
Intermediate nerves of the lemma strong.
Branches of the inflorescence in fruit ascending, the lower in 3's or 4's; lemma acutish; cobweb copious; rootstock creeping. II. Pratenses.
Branches of the inflorescence in fruit reflexed or at least spreading; lemma usually acuminate or very acute; cobweb scant or sometimes none.
Spikelets many, light green; branches of the inflorescence numerous, the lower in 3's, or 4's, or 5's; rootstock creeping. III. Platyphyllae.
Spikelets few, usually more or less purple, except in *P. leptocoma;* branches of the inflorescence few, the lower usually in 2's, rarely in 3's, spikelet-bearing towards the ends. IV. Reflexae.
Intermediate nerves of the lemma faint or obsolete.
Stem compressed; lemma obtuse. V. Compressae.
Stem not compressed; lemma acute or acuminate.
Branches of the panicles reflexed; rootstock creeping. VI. Apertae.
Branches of the panicles not reflexed. VII. Triflorae.
Cobweb wanting.
Spikelets rounded at the base; empty glumes very broad and their keel strongly arched; low tufted perennials, with short open panicle and broad leaves. VIII. Alpinae.
Spikelets acute at the base; empty glumes narrower, not strongly arched on their keels.
Plants with horizontal creeping rootstocks; not bunch-grasses.
Spikelets strongly compressed; lemma strongly keeled, strongly 5-nerved, conspicuously scabrous; glumes very acute. IX. Wheelerianae.
Spikelets not strongly compressed; lemma neither strongly compressed nor strongly nerved (except in *P. pratensiformis*), not conspicuously scabrous.
Lemma acuminate, dark purple; innovations extravaginal. X. Phoeniceae.
Lemma obtuse or acutish, green or merely tinged with purple; innovations both extra- and intravaginal. XI. Aridae.
Plants without extravaginal rootstocks; densely tufted bunch-grasses.
Lemma 3–4 mm. long.
Low alpine plants, with narrow panicles of few purplish spikelets; lemma ovate. XII. Rupicolae.
Slender plants, 4–5 dm. high, with open panicles; lemma narrowly lanceolate in side-view. XIII. Multnomae.
Lemma 5 mm. long or more; plants comparatively robust.
Spikelets decidedly flattened; lemma acute and keeled on the back.
Pubescence on the nerves of the lemma, if any, not stronger than on the internerves; flowers perfect.
Inflorescence dense and spike-like. XIV. Epiles.
Inflorescence open; branches spikelet-bearing towards their ends. XV. Gracillimae.
Pubescence of the nerves of the lemma villous or pilose, that of the internerves none or almost none; plants dioecious. XVI. Fendlerianae.
Spikelets little flattened; lemma rounded on the backs towards the apex, almost straight, obtuse. XVII. Buckleyanae.

I. Annuae.

Low, 1–2 dm. high; branches of the panicle spreading. 1. *P. annua.*
Taller, erect, 2–5 dm. high; branches of the panicle erect. 2. *P. Bigelovii.*

II. Pratenses.

Lemma 3–4 mm. long; ligule truncate. 3. *P. pratensis.*
Lemma 5 mm. long; ligule not truncate. 4. *P. rhizomata.*

III. PLATYPHYLLAE.

Ligules truncate or abruptly acute. 5. *P. occidentalis.*
Ligules lanceolate, long attenuate. 6. *P. callida.*

IV. REFLEXAE.

Cobweb present but often scant.
Lemmas obtuse; cobweb dense. 7. *P. lanata.*
Lemmas acute or acuminate; cobweb scant.
Internerves of the lemma more or less pubescent, at least below.
Spikelets 3–4-flowered; stem-leaves usually folded or involute; plant usually less than 3 dm. high, tufted.
Internerves of the lemma short-pubescent below; leaves filiform, involute; those of the sterile shoots usually arcuate. 8. *P. cenisia.*
Internerves of the lemma long-hairy, at least below; leaves 1–2 mm. wide, usually conduplicate, rather firm.
Plant low, 1–3 dm. high, usually cespitose; lemma acute. 9. *P. arctica.*
Plant tall, 3–5 dm. high, not cespitose, with a creeping rootstock; floral glumes acuminate. 10. *P. longipila.*
Spikelets 5–7-flowered; leaves all flat, 3–4 mm. wide; stem fully 3 dm. high. 11. *P. callichroa.*
Internerves of the lemma glabrous; plants with creeping rootstocks.
Intermediate nerves of the lemma pubescent; plant 3 dm. or less high; leaves mostly basal, firm; stem-leaves 1–2, usually conduplicate. 12. *P. pudica.*
Intermediate nerves of the lemma glabrous; plant usually over 3 dm. high; stem-leaves several, flat and flaccid.
Hairs of the midnerves and lateral nerves copious and spreading.
Lemma ovate, abruptly acute, usually purple. 13. *P. reflexa.*
Lemma lanceolate, gradually acute, usually pale green. 14. *P. nervosa.*
Hairs of the midnerves and lateral nerves few and appressed or none. 15. *P. leptocoma.*
Cobweb lacking; internerves and the intermediate nerves glabrous; midnerves and lateral nerves hairy; habit like *P. arctica.* 16. *P. alpicola.*

V. COMPRESSAE.

One species. 17. *P. compressa.*

VI. APERTAE.

Branches of the inflorescence short, usually in pairs. 18. *P. aperta.*
Branches of the inflorescence very long, in 3's to 5's. 19. *P. macroclada.*

VII. TRIFLORAE.

Lemma 5 mm. long. 4. *P. rhizomata.*
Lemma 3 mm. long or less.
Stem stout; leaves 2–5 mm. wide; ligule 3–4 mm. long, triangular; branches of the panicle at last spreading; second glume narrower than the lemma, three-fourths as long or more. 20. *P. triflora.*
Stem slender; leaves seldom over 2 mm. wide; ligule about 1 mm. long, truncate; branches of the panicle ascending or erect.
Flowers green; the second empty glume with broad, scarious margins and strong lateral nerves
Inflorescence with erect branches; second empty glume narrower than the lemma. 21. *P. subtrivialis.*
Inflorescence with ascending branches; second empty glume not narrower than the lemma. 22. *P. interior.*
Flowers usually purple-tinged; scarious margin of the empty glumes scarcely evident and lateral nerves faint. 23. *P. crocata.*

VIII. ALPINAE.

One species. 24. *P. alpina.*

IX. WHEELERIANAE.

Lower sheaths retrorsely strigulose.
Internerves of the acute lemma merely strigulose or scabrous.
Nerves of the lemma scabrous; ligules short, truncate.
Branches of the inflorescence ascending. 25. *P. Olneyae.*
Branches of the inflorescence reflexed. 26. *P. subreflexa.*
Nerves of the lemma silky or villous on the lower portion.
Ligules 2 mm. long, truncate; leaf-blades narrow, ascending. 27. *P. Wheeleri.*
Ligules 4–5 mm. long, lanceolate, acuminate; leaf-blades broad, spreading. 28. *P. Vaseyana.*
Internerves of the obtusish lemma villous, at least below. 29. *P. tricholepis.*
Leaf-sheaths all glabrous and smooth.
Ligules lanceolate, acute, 3 mm. long. 30. *P. Tracyi.*
Ligules truncate, about 1 mm. long. 31. *P. curta.*

X. PHOENICEAE.

Plant tall, 4 dm. high or more; nerves and internerves of the lemma villous. 32. *P. Grayana.*
Plant low, usually less than 3 dm. high; internerves of lemma glabrous. 16. *P. alpicola.*

XI. ARIDAE.

Internerves of the lemma pubescent, at least below; stem stout; inflorescence dense; ligules acute.
Intermediate nerves of the lemma strong; plant tall; glumes 5 mm. long. 33. *P. pratensiformis.*
Intermediate nerves of the lemma weak; glumes 3–4 mm. long.
Keel and the marginal nerves of the lemma villous; empty glumes equalling the lemma. 34. *P. arida.*
Keel and marginal nerves of the lemma short-hairy, with appressed hairs; empty glumes shorter than the lemma. 35. *P. Sheldoni.*
Internerves of the lemma glabrous; stem slender; inflorescence open; ligule obtuse. 36. *P. glaucifolia.*

XII. RUPICOLAE.

Midnerve and lateral nerves of the lemma pubescent; plant strict, 1–5 dm. high.
Cobweb at the base of the flowers scant; stem slender and leafy, usually 3–5 dm. high. 23. *P. crocata.*
Cobweb none; stem 1–2 (seldom 3) dm. high, leafy mostly at the base.
Flowering glumes 3 mm. long or less, firm, obtuse. 37. *P. rupicola.*
Flowering glumes about 4 mm. long, acute, thin. 38. *P. Pattersoni.*
Nerves of the lemma glabrous; plant seldom over 5 cm. high. 39. *P. Lettermani.*

XIII. MULTNOMAE.

One species. 40. *P. Multnomae.*

XIV. EPILES.

Plant green; lemma purple or dark green, abruptly acute; ligules acute.
Blades of the stem-leaves about 3 mm. wide, flat; lemma more than 5 mm. long, dark purple. 41. *P. paddensis.*
Blades of the stem-leaves 1–2 mm. wide; lemma 4–5 mm. long.
Lemma purple, minutely scabrous, nearly smooth. 42. *P. Cusickii.*
Lemma green, only tinged with purple, hispidulous-scabrous. 43. *P. epilis.*
Plant pale; lemma very pale, long-attenuate or subcuspidate; leaves all filiform.
Ligules lanceolate, acuminate.
Panicle thick; branches with several 5–7-flowered spikelets; leaves very scabrous. 44. *P. scaberrima.*
Panicle narrow, slender; branches very short, with 1–2, only 2–4-flowered spikelets. 45. *P. nematophylla.*
Ligules oblong, 1 mm. long, truncate; panicle dense and spike-like. 46. *P. subaristata.*

XV. GRACILLIMAE.

Lemma linear-lanceolate, 5–6 mm. long. 47. *P. idahoensis.*
Lemma ovate, 4–5 mm. long.
Plant 1–3 dm. high; panicle with ascending branches and many spikelets. 48. *P. gracillima.*
Plant 0.5-1.5 dm. high; panicle with divaricate branches and few spikelets. 49. *P. Vaseyochloa.*

XVI. FENDLERIANAE.

Ligules 5–7 mm. long, acute or acuminate. 50. *P. longiligula.*
Ligules short, rounded or truncate, or those of the innovations obsolete.
Leaf-blades erect; spikelets 3–5- (rarely 6–7-) flowered.
Lemma oblong; leaf-blades very slender, scabrous. 51. *P. scabriuscula.*
Lemma ovate; leaf-blades more rigid.
Panicle very narrow, its branches erect and spikelet-bearing to the base; lemma 4 mm. long. 52. *P. longipedunculata.*
Panicle more open, its branches ascending, usually naked at the base.
Plant low; panicle short; lemma 3.5–4 mm. long. 53. *P. brevipaniculata.*
Plant tall; panicle elongated; lemma 5 mm. long. 54. *P. Fendleriana.*
Leaf-blades spreading; spikelets 7–9- (rarely 5–6-) flowered. 55. *P. Eatoni.*

XVII. BUCKLEYANAE.

Ligules lanceolate, acuminate or attenuate.
Empty glumes strongly nerved, elongate-lanceolate, almost equalling the very scabrous or strigose lemma.
Leaves 4–6 mm. wide, flat. 56. *P. Canbyi.*
Leaves 1–3 mm. wide, conduplicate or involute.
Lemma strongly scabrous; leaves stiff; plant stout. 57. *P. nevadensis.*
Lemma strigose, at least below; leaves filiform, flaccid; plant slender. 58. *P. Helleri.*
Empty glumes not strongly nerved, ovate-lanceolate, usually much shorter than the lemma.
Plant yellowish green; spikelets yellowish or straw-colored.
Lemma merely scabrous. 59. *P. laevigata.*
Lemma more or less strigose on the lower portion. 60. *P. lucida.*
Plant dark green; spikelets dark green or purplish.
Leaf-blades almost 2 mm. wide, flat or conduplicate; lemma more than 4 mm. long. 61. *P. Buckleyana.*
Leaf-blades less than 1 mm. wide, filiform, involute; lemma less than 4 mm. long. 62. *P. Sandbergii.*

Ligules 1–2 mm. long, truncate, rounded or abruptly acute.
Plant 2–4 dm. high; leaves mostly basal and stiff, short, seldom 8 cm. long; ligules rounded. 63. *P. juncifolia.*
Plant taller, 4–10 dm. high, leafy; leaves longer.
Internerves of the lemma glabrous; nerves silky. 36. *P. glaucifolia.*
Internerves of the lemma as well as the nerves scabrous.
Leaves filiform, less than 1 mm. wide. 64. *P. brachyglossa.*
Leaves flat or involute, but not filiform, 2–5 mm. wide.
Ligules ovate or rounded, acute or obtuse; leaves soft. 65. *P. confusa.*
Ligules truncate; leaves stiff.
Inflorescence very narrow; branches erect. 66. *P. truncata.*
Inflorescence more open, lobed; branches ascending. 67. *P. ampla.*

65. SCOLÓCHLOA Link. 1. *S. festucacea.*

66. PANICULÀRIA Fabr. MANNA-GRASS.

Spikelets ovate or oblong, 6 mm. long or less.
Lemma 7-nerved, obscurely denticulate at the apex.
Spikelets 2–4 mm. long; lemma broadly oval, 1.5–2 mm. long.
Leaf-blades flat and lax; lemma slightly scarious-margined; branches of the inflorescence long; empty glumes obtuse.
Plant slender; branches of the inflorescence strongly ascending, nodding. 1. *P. nervata.*
Plant stout; branches of the inflorescence spreading or reflexed, not nodding. 2. *P. elata.*
Leaf-blades conduplicate, stiff, ascending; lemma distinctly scarious-margined; branches of the inflorescence short, strongly ascending, not drooping. 3. *P. rigida.*
Spikelets 4–6 mm. long; lemma narrowly oval, 2–3 mm. long; inflorescence ample; branches finally spreading.
Lemma barely scarious-margined; empty glumes acute, lanceolate. 4. *P. grandis.*
Lemma with broad scarious margins; empty glumes obtuse. 5. *P. pulchella.*
Lemma 5-nerved, distinctly dentate at the apex, broadly scarious-margined.
Spikelets 4–6-flowered. 6. *P. pauciflora.*
Spikelets 2-flowered. 7. *P. Holmii.*
Spikelets linear, 10 mm. long or more; lemma 7-nerved, erose.
Spikelets 10–17 mm. long, on pedicels at least one-third their length. 8. *P. borealis.*
Spikelets 15–20 mm. long, subsessile or nearly so. 9. *P. septentrionalis.*

67. PUCCINÉLLIA Parl. MEADOW-GRASS.

Leaves mostly basal; panicle less than 1 dm. long. 1. *P. Lemmoni.*
Leaves scattered on the stem; panicle usually more than 1 dm. long.
Lemma 2–2.5 mm. long, distinctly nerved. 2. *P. Nuttalliana.*
Lemma 2 mm. long or less, obscurely nerved. 3. *P. tenuiflora.*

68. FESTŪCA L. FESCUE-GRASS.

Perennials; stamens 3.
Leaf-blades of the innovations narrow, 3 mm. wide or less, involute.
Innovations extravaginal; *i. e.*, plants with creeping rootstocks and stolons; leaves smooth.
Spikelets pubescent. 1. *F. Kitaibeliana.*
Spikelets glabrous or scabrous.
Body of the lemma 5–7 mm. long; leaf-blades rather firm.
Stem-leaves with flat blades; innovations numerous. 2. *F. rubra.*
Stem-leaves with filiform involute blades; innovations few. 3. *F. vallicola.*
Body of the lemma about 4 mm. long; leaf-blades filiform, soft. 4. *F. Earlei.*
Innovations intravaginal; plants bunch-grasses.
Ligules short, truncate or rounded.
Body of the lemma 3–8 mm. long; leaf-blades long, persistent on the sheaths; palet obtuse or 2-toothed at the apex.
Pulvini at the bases of the branches of the panicle none or obsolete; tufts easily separable.
Lemma (without the awns) 3–4-mm. long, not half longer than the first glume; plant 1–2 (rarely 3) dm. high; inflorescence spike-like.
Lemma lanceolate, long-acuminate and long-awned; panicle dense; leaf-blades short, scarcely filiform.
Leaf-blades soft and sulcate, at least in age. 5. *F. brachyphylla.*
Leaf-blades firm and terete, even in age. 6. *F. supina.*
Lemma oblong-lanceolate, abruptly contracted into a short awn; panicle lax; leaf-blades narrowly filiform and soft. 7. *F. minutiflora.*
Lemma (without the awns) 5–8 mm. long; plant usually over 3 dm. high.
Old sheaths of the innovations brown and papery. 8. *F. calligera.*

Old sheaths of the innovations neither brown nor papery.
Basal leaf-sheaths short remaining involute in age; blades of stem-leaves rarely 8 cm. long.
Awn short, less than half as long as the lemma; inflorescence dense and narrow. 9. *F. saximontana.*
Awn long, from nearly equalling to much exceeding the lemma; inflorescene open.
Awn little if at all exceeding the lemma in length; ovary glabrous.
Leaves scabrous. 10. *F. ingrata.*
Leaves smooth. 11. *F. idahoensis.*
Awn much exceeding the lemma; ovary hispidulous at the apex. 12. *F. occidentalis.*
Basal sheaths long and becoming flattened in age, often 1 dm. long; blades of the stem-leaves over 1 dm. long. 13. *F. arizonica.*
Pulvini at the bases of the branches of the panicle rather conspicuous; tufts separable with difficulty. 14. *F. viridula.*
Body of the lemma 8–12 mm. long; leaf-blades soon breaking off from the sheath; palet notched at the apex; bunch-grasses.
Branches of the panicle spreading or reflexed; spikelets shining; leaves smooth beneath. 15. *F. altaica.*
Branches of the panicle erect or ascending; spikelets rather dull; leaves very scabrous.
Plant 5–15 dm. high; basal sheaths long, loose, in age more or less flattened; empty glumes narrowly lanceolate, acuminate; second glume shorter than the spikelet. 16. *F. campestris.*
Plant 3–5 dm. high; basal sheaths usually short and close even in age; empty glumes acute, lanceolate; second glume about equalling the spikelet. 17. *F. scabrella.*
Ligules elongate, 4–9 mm. long, acute. 18. *F. Thurberi.*
Leaf-blades all flat, 4 mm. wide or more; perennials with rootstocks.
Lemma abruptly acute, not at all keeled. 19. *F. elatior.*
Lemma awned or awn-pointed, keeled at least above the middle.
Awn or awn-point shorter than the lemma.
Lemma distinctly 5-nerved; awn from the cleft apex; panicle ciliate. 20. *F. dasyclada.*
Lemma with indistinct intermediate nerves; awn terminal; panicle not ciliate. 21. *F. sororia.*
Awn longer than the lemma. 22. *F. subulata.*
Annuals; stamens usually solitary.
Spikelets 5–13-flowered; both glumes subulate. 23. *F. octoflora.*
Spikelets loosely 1–5-flowered; first glume subulate, the second lanceolate.
Branches of the short panicle normally divergent, a pulvinus at the base of at least one of them.
Spikelets usually 3–5-flowered, only the main branches of the inflorescence divergent. 24. *F. pacifica.*
Spikelets usually 1–3-flowered; all branches divergent or reflexed. 25. *F. reflexa.*
Branches of the elongated narrow panicle erect and appressed. 26. *F. megalura.*

69. HESPERÓCHLOA (Piper) Rydb. 1. *H. Kingii.*

70. BRÒMUS L. Brome-grass, Chess, Cheat.

Second empty glume 5–7-nerved; first empty glume 3-nerved.
Lemma compressed-keeled.
Palet less than three-fourths as long as the lemma, which is scarcely toothed.
Sheaths and usually also the blades hairy; lemma pubescent or hispidulous-scabrous.
Lemma hispidulous-scabrous.
Awns 10–15 mm. long. 1. *B. Hookerianus.*
Awn 4–6 mm. long. 2. *B. Flodmanii.*
Lemma pubescent; awns 4–8 mm. long.
Lower branches of the panicle 7 cm. long or less, in fruit erect.
Leaves flat, not canescent. 3. *B. breviaristatus.*
Leaves involute, canescent. 4. *B. subvelutinus.*
Lower branches of the panicle 1 dm. long or longer, spreading in fruit. 5. *B. latior.*
Sheaths and blades glabrous or minutely scabrous.
Panicle narrow, strict; awn 4–6 mm. long. 6. *B. polyanthus.*
Panicle open, spreading and nodding; awn 6–7 mm. long. 5. *B. paniculatus.*
Palet more than three-fourths as long as the lemma, which is distinctly toothed at the apex. 8. *B. unioloides.*
Lemma rounded on the back, broadly elliptic; introduced tufted annuals or biennials.
Lemma nearly as broad as long, awnless or with a very short awn. 9. *B. brizaeformis.*
Lemma much longer than broad, conspicuously awned.
Lemma and glumes glabrous.
Awn much shorter than the lemma, nearly erect.
Sheaths glabrous. 10. *B. secalinus.*
Sheaths densely pubescent. 11. *B. racemosus.*

Awn fully as long as the lemma, at maturity strongly divergent; sheaths pubescent. 12. *B. patulus.*
Lemma and glumes more or less pubescent. 13. *B. hordeaceus.*
Second empty glume 3-nerved; first empty glume 1-nerved, except in *B. Porteri.*
Awns shorter than the lemma; plants perennial with rootstocks, all native except *B. inermis.*
Inflorescence more or less drooping.
Awn 6–9 mm. long; empty glumes sparingly pubescent or glabrous. 14. *B. eximius.*
Awn 2–5 mm. long.
Empty glumes decidedly pubescent.
First empty glume 3-nerved; inflorescence narrow. 15. *B. Porteri.*
First empty glume 1-nerved; inflorescence open.
Sheaths with a ring of dense hairs at the base of the blades. 16. *B. latiglumis.*
Sheaths without a ring of hairs. 17. *B. purgans.*
Empty glumes glabrous or merely scabrous on the nerves.
Lemma evenly pubescent on the back; sheaths densely hairy. 18. *B. lanatipes.*
Lemma ciliate on the margins, glabrous or sparingly hairy on the back; sheaths glabrous or the lower sparingly hirsute. 19. *B. ciliatus.*
Inflorescence not drooping.
Inflorescence narrow; its branches erect; lemma usually with awn 2–3 mm. long. 20. *B. Pumpellianus.*
Inflorescence broad; its branches spreading; lemma usually awnless. 21. *B. inermis.*
Awn longer than the lemma; introduced tufted annuals.
Spikelets numerous on slender, recurved pedicels; lemma 8–12 mm. long. 22. *B. tectorum.*
Spikelets few; pedicels not recurved; lemma 12–30 mm. long.
Awn less than 3 cm. long. 23. *B. sterilis.*
Awn 3.5–4 cm. long. 24. *B. maximus.*

71. LÒLIUM L. Darnel, Rye-grass.

Empty glumes shorter than the spikelet; perennial. 1. *L. perenne.*
Empty glume longer than the spikelet; annual. 2. *L. temulentum.*

72. AGROPŸRON Gaertner. Wheat-grass, Quitch-grass, Quick-grass.

Rachis of the spike breaking up at maturity, the internodes falling with the spikelets; lemma long-awned. 1. *A. Scribneri.*
Rachis of the spike remaining continuous.
Tufted plants with intravaginal innovations; no horizontal stolons (except in *A. arizonicum*).
Lemma long-awned, *i. e.*, the awn usually longer than the body of the lemma.
Basal leaf-blades shorter than the upper ones; spikelets slightly compressed; awns somewhat spreading. 2. *A. Gmelini.*
Basal leaf-blades longer than the upper ones.
Awn divergent.
Spikelets remote on the axis, more or less compressed.
Spikelets erect, empty glumes nearly equalling the spikelet. 3. *A. Vaseyi.*
Spikelets spreading or ascending; empty glumes half as long as the spikelet.
Empty glumes linear-oblong, acute or obtuse; stem-leaves 3 or 4, not glaucous. 4. *A. spicatum.*
Empty glumes narrowly lanceolate, acuminate or awn-pointed; stem-leaves 6 or 7, glaucous. 5. *A. arizonicum.*
Spikelets crowded on the axis, subterete. 6. *A. Bakeri.*
Awns erect.
Plant tall, usually more than 3 dm. high, erect or ascending; empty glumes broadest below the middle; spike elongated.
Stem stout; spike 7–10 mm. thick, erect, but usually unilateral; spikelets (exclusive of the awns) 15–25 mm. long. 7. *A. Richardsoni.*
Stem slender; spike about 5 mm. thick, seldom unilateral; spikelets (exclusive of the awns) about 1 cm. long. 8. *A. caninoides.*
Plant 2–3 dm. high, decumbent at the base, geniculate; empty glumes broadest above the middle, scarious-margined; spike short and dense. 9. *A. andinum.*
Lemma short-awned or awnless.
Spikes stout and dense, 3–8 cm. long; empty glumes broadest above the middle.
Lemma densely pubescent; empty glumes conspicuously white-margined. 10. *A. latiglume.*
Lemma glabrous or scabrous; empty glumes not conspicuously white-margined. 11. *A. biflorum.*
Spike slender and lax, 7–20 cm. long; empty glumes broadest below the middle.
Spikelets terete, appressed; empty glumes nearly as long as the spikelets. 12. *A. tenerum.*
Spikelets flattened; empty glumes much shorter than the spikelets. 13. *A. inerme.*
Stoloniferous plants with horizontal rootstocks, sometimes slightly tufted; innovations extravaginal.

Lemma with a long, more or less divergent awn.
Lemma pubescent. 14. *A. albicans.*
Lemma glabrous or scabrous.
Spikelets subterete, appressed. 15. *A. Griffithsii.*
Spikelets compressed, spreading. 5. *A. arizonicum.*
Lemma awnless or with a very short erect awn; empty glumes usually narrowly lanceolate, acuminate.
Sheaths conspicuously pilose. 16. *A. Palmeri.*
Sheaths glabrous or nearly so.
Lemma glabrous or merely scabrous.
Spikelets erect, nearly cylindric or slightly compressed.
Spike elongate; empty glumes nearly equalling the spikelets. 17. *A. pseudorepens.*
Spike short; empty glumes about half as long as the spikelets. 18. *A. riparium.*
Spikelets much flattened, spreading. 19. *A. Smithii.*
Lemma from villous to hispidulous.
Lemma short-pubescent.
Spikelets compressed, more or less spreading; lemma acuminate or strongly acute. 20. *A. molle.*
Spikelets terete or nearly so, erect; lemma obtuse or acutish.
Spike loose, elongate; lemma sparingly pubescent. 21. *A. lanceolatum.*
Spike dense and short; lemma densely pubescent. 22. *A. subvillosum.*
Lemma long-villous. 23. *A. dasystachyum.*

73. TRÍTICUM L. Wheat.

Empty glumes distinctly keeled only at the apex; grain dull, neither glossy nor semi-translucent. 1. *T. aestivum.*
Empty glumes distinctly keeled, almost winged, to the base; grain glossy, often somewhat translucent. 2. *T. durum.*

74. SECÀLE L. Rye. 1. *S. cereale.*

75. HÒRDEUM L. Barley, Squirrel-tail, Foxtail.

Lateral spikelets sessile; annuals.
Lemma not awned, the awns represented by chartaceous lobes. 1. *H. aegiceras.*
Lemma awned. 2. *H. vulgare.*
Lateral spikelets stalked; lemma awned.
Floret of the central spikelet sessile.
Empty glumes of the central spikelets lanceolate. 3. *H. pusillum.*
Empty glumes of central spikelet not lanceolate.
Inner empty glumes of the lateral spikelets broadened. 4. *H. maritimum.*
Empty glumes all setaceous.
Lateral floret not awned.
Plant low, 5–25 cm. high; upper sheaths inflated. 5. *H. depressum.*
Plant taller, 2–6 dm. high; upper sheath not conspicuously inflated.
Lateral floret neutral or staminate; lemma of the central floret 6–8 mm. long. 6. *H. nodosum.*
Lateral floret usually perfect; lemma of the central flower 10 mm. long. 7. *H. boreale.*
Lateral florets long-awned.
Awn 2–3 cm. long. 8. *H. caespitosum.*
Awn 4–6 cm. long. 9. *H. jubatum.*
Floret of the central spikelets stalked.
Empty glumes not ciliate. 10. *H. montanense.*
Empty glumes or some of them ciliate. 11. *H. murinum.*

76. SITÀNION Raf.

Empty glumes lanceolate, scarious-margined.
Leaf-blades not white-margined. 1. *S. lanceolatum.*
Leaf-blades white-margined. 2. *S. marginatum.*
Empty glumes setaceous, or cleft into setaceous divisions, not scarious-margined.
Empty glumes setaceous, entire; lowest flower perfect.
Lemma soft-pubescent. 3. *S. pubiflorum.*
Lemma glabrous. 4. *S. elymoides.*
Empty glumes or some of them 2-cleft; lowest flower rudimentary.
Lemma pubescent; sheaths and blades densely pubescent.
Blades and sheaths short-hairy, subvelutinous.
Awns at least 4 times as long as the lemma. 5. *S. Hystrix.*
Awns 2–3 times as long as the lemma. 6. *S. cinereum.*
Blades and sheaths long-hairy. 7. *S. ciliatum.*
Lemma glabrous or scabrous.
Empty glumes subulate-lanceolate, bifid about two-thirds their length. 8. *S. insulare.*
Empty glumes setaceous, or cleft to near the base into setaceous divisions.
Sheaths and blades more or less long-pubescent.
Lemma glabrous. 9. *S. molle.*
Lemma scabrous. 10. *S. strigosum.*
Sheaths and blades glabrous, scabrous, or puberulent; lemma smooth below, scabrous above.

Awns of the lemma 3–4 cm. long, divergent; plant very low. 11. *S. rigidum.*
Awns of the lemma 4–7 cm. long; plant taller, more than 2 dm. high.
Leaf-blades 2–5 mm. broad, flat or slightly involute.
Plant perfectly glabrous; awn ascending. 12. *S. glabrum.*
Plant puberulent or scabrous; awns divergent. 13. *S. montanum.*
Leaf-blades 1–2 mm. broad, strongly involute. 14. *S. basalticola.*

77. ÉLYMUS L. Lyme-grass, Wild Rye, Rye-grass, Buffalo Rye.

Lemma long-awned.
Spike broad; spikelets spreading.
Empty glumes lanceolate to lanceolate-subulate; spike dense.
Empty glumes lanceolate, 5–7-nerved, thick and strongly curved at the base; spike erect.
Plant robust; spike scarcely exserted; lemma glabrous or nearly so. 1. *E. virginicus.*
Plant slender; spike long-exserted; lemma scabrous-hispidulous. 2. *E. jejunus.*
Empty glumes narrowly linear-lanceolate, neither conspicuously thickened nor curved at the base; spike often nodding.
Empty glumes usually minute, less than 15 mm. long. 4. *E. diversiglumis.*
Empty glumes 15–30 mm. long.
Lemma hirsute or villous. 3. *E. canadensis.*
Lemma hispidulous-scabrous to glabrous.
Robust; spike usually included at the base; leaf-blades 8–15 mm. wide. 5. *E. robustus.*
Slender; spike long-exserted; leaf-blades seldom more than 5 mm. wide. 6. *E. brachystachys.*
Empty glumes setaceous, hirsute; lemma hirsute; spike laxer. 7. *E. striatus.*
Spike narrow; spikelets erect, appressed.
Lemma pubescent.
Empty glumes lanceolate, 5-nerved. 8. *E. vulpinus.*
Empty glumes lance-subulate, indistinctly veined. 9. *E. angustus.*
Lemma scabrous or glabrous.
Empty glumes lanceolate, acuminate or short-awned, 2–5-nerved.
Spike dense; spikelets more or less imbricate.
Plants not tufted, with rootstocks; leaf-blades spreading.
Sheaths and blades glabrous; glumes scabrous, at least above. 10. *E. glaucus.*
Sheaths and lower leaf-blades pubescent; glumes glabrous. 11. *E. marginalis.*
Plants tufted; leaf-blades ascending. 12. *E. nitidus.*
Spike lax; spikelets distant; glumes glabrous. 13. *E. Petersonii.*
Empty glumes linear-subulate.
Spike 7–8 mm. thick; awns 30–40 mm. long. 14. *E. Saundersii.*
Spike 5 mm. thick; awns 5–10 mm. long. 15. *E. Macounii.*
Lemma awnless or short-awned; awn less than one-third the length of the body.
Empty glumes strongly 3–5-nerved.
Empty glumes thickened and strongly curved at the base, not scarious-margined. 16. *E. curvatus.*
Empty glumes neither thickened nor strongly curved at the base, more or less scarious-margined. 17. *E. Howellii.*
Empty glumes 1-nerved or indistinctly 3-nerved.
Lemma glabrous or hispidulous.
Empty glumes aristiform or narrowly subulate.
Plant stout, 1–2 m. high, tufted; spikelets 2–6 at each joint; lemma scabrous-hispidulous. 18. *E. condensatus.*
Plant slender, 3–10 dm. high; spikelets 1 or 2 at each joint.
Lemma broadly lanceolate, acute or awn-pointed; rachis scabrous on the sharp angles; spikelets erect; plant with a horizontal rootstock. 19. *E. triticoides.*
Lemma narrowly lanceolate; rachis nearly terete, strigose; plant tufted.
Spikelets usually in pairs; lemma awn-pointed.
Lemma glabrous. 20. *E. ambiguus.*
Lemma scabrous or scabro-strigose. 21. *E. strigosus.*
Spikelets usually singly; lemma acuminate or acute. 22. *E. salinus.*
Empty glumes lanceolate-subulate, tapering from the rather broad base; lemma glabrous. 23. *E. simplex.*
Lemma pubescent.
Plants tufted; lemma long-attenuate, short-awned. 24. *E. villiflorus.*
Plants not tufted, or somewhat so in *E. cinereus*, with horizontal rootstocks; lemma not long-attenuate.
Lemma appressed-pubescent.
Stem, sheath, and leaves glabrous or minutely strigulose. 25. *E. arenicola.*
Stem, sheath, and leaves densely short pubescent. 26. *E. cinereus.*
Lemma with spreading pubescence.
Spike long; empty glumes lanceolate, silky-villous. 27. *E. flavescens.*
Spike short; empty glumes subulate, scabrous. 28. *E. innovatus.*

78. HÝSTRIX Moench. 1. *H. Hystrix.*

Family 13. **CYPERACEAE.** Sedge Family.

Flowers all perfect, or at least one in each spikelet perfect.
- Glumes of the spikelets 2-ranked.
  - Perianth represented by bristles; inflorescence axillary. 1. Dulichium.
  - Perianth wanting; spikelets in terminal, solitary or umbellate heads. 2. Cyperus.
- Glumes of the spikelets spirally imbricate.
  - Base of the style persistent as a tubercle on the achene.
    - Basal empty glumes several. 3. Rynchospora.
    - Basal empty glumes wanting, or 1 or 2.
      - Spikelets solitary; stem leafless; bristles usually present. 4. Eleocharis.
      - Spikelets several or numerous; stem leafy; bristles none. 5. Stenophyllus.
  - Base of the style not persistent as a tubercle.
    - Base of the style swollen; bristles none. 6. Fimbristylis.
    - Base of the style not swollen; bristles usually present.
      - Flowers without any inner scales.
        - Bristles much elongating in fruit, silky.
          - Bristles 6, but each 4–6-cleft to near the base, therefore appearing numerous. 7. Eriophorum.
          - Bristles 6, simple, crisp. 8. Leucocoma.
        - Bristles short, or little elongating, rarely wanting. 9. Scirpus.
      - Flowers with a small inner scale between the flower and the rachis. 10. Hemicarpha.

Flowers monoecious or dioecious.
- Achenes not enclosed in a perigynium.
  - Spikes several, clustered; glumes subtending a single flower. 11. Kobresia.
  - Spikes solitary; glumes subtending 2 flowers. 12. Elyna.
- Achenes enclosed in a perigynium. 13. Carex.

1. **DULÍCHIUM** L. C. Rich.

1. *D. arundinaceum.*

2. **CYPÈRUS** L. Galingale, Nut-grass.

Glumes falling away from the persistent rachis of the flat spikelets.
- Style 2-cleft; achenes lenticular. 1. *C. diandrus.*
- Style 3-cleft; achenes 3-angled.
  - Wings of the rachis none or very narrow.
    - Annuals; stamen 1.
      - Glumes awned or mucronate. 2. *C. inflexus.*
      - Glumes acute, neither awned nor mucronate. 3. *C. acuminatus.*
    - Perennials; stamens 2 or 3.
      - Glumes tipped with a curved or bent awn; perennials with a rootstock. 4. *C. Fendlerianus,*
      - Glumes blunt or mucronate; perennials with a corm-like base.
        - Heads oblong; spikelets ascending; stem rough. 5. *C. Schweinitzii.*
        - Heads short; spikelets more or less spreading; stem smooth.
          - Glumes broadly ovate; achenes 1.5–2 mm. long. 6. *C. Houghtoni.*
          - Glumes oblong-ovate; achenes 2–2.5 mm. long. 7. *C. Bushii.*
  - Wings of the rachis prominent and separating from it as interior scales. 8. *C. erythrorhizos.*

Spike ets wholly falling away, usually leaving the two lower glumes persistent. 9. *C. strigosus.*

3. **RYNCHÓSPORA** Vahl. Beaked Rush.

1. *R. alba.*

4. **ELEÓCHARIS** R. Br. Spike-rush, Wire-grass.

Style-branches 2; achenes lenticular or biconvex.
- Sheath hyaline, and scarious at the summit. 1. *E. thermalis.*
- Sheath firm, not scarious at the summit.
  - Annuals, with fibrous roots.
    - Achenes black, shining. 2. *E. atropurpurea.*
    - Achenes pale brown, dull.
      - Spikelets narrowly oblong or subcylindric; glumes blunt, closely appressed. 3. *E. Engelmanni.*
      - Spikelets lance-ovoid or lance-oblong; glumes acutish, more spreading. 4. *E. monticola.*
  - Perennials, with rootstocks. 5. *E. palustris.*

Style-branches 3; achenes trigonous or turgid; perennials, with rootstocks.
- Achenes cancellate and longitudinally ribbed; spikelets flat. 6. *E. acicularis.*
- Achenes smooth, papillose or reticulate.
  - Tubercle of the achenes short-conic to depressed, plainly distinguishable from the achene.
    - Achenes papillose.
      - Stem filiform; glumes obtuse. 7. *E. tenuis.*
      - Stem flat; glumes acute. 8. *E. acuminata.*
    - Achenes finely reticulated. 9. *E. arenicola.*
  - Tubercle of the achenes long-conic, scarcely distinguishable from the body of the achene. 10. *E. rostellata.*

5. **STENOPHÝLLUS** Raf.

1. *S. capillaris.*

6. FIMBRÍSTYLIS Vahl.

1. *F. interior.*

7. ERIÓPHORUM L. COTTON-GRASS.

Spikelets solitary; involucre wanting.
Plant stoloniferous.
Glumes purplish-brown with narrow, pale margins. 1. *E. Scheuchzeri.*
Glumes purplish-brown with white, broad margins. 2. *E. Chamissonis.*
Plant tufted, not stoloniferous.
Upper sheaths inflated; stem rough above. 3. *E. callitrix.*
Upper sheaths not inflated; stem smooth. 4. *E. opacum.*
Spikelets several, subtended by foliaceous bracts.
Leaf-blades triangular-channeled throughout. 5. *E. gracile.*
Leaf-blades flat, at least below the middle.
Midrib of the glumes not prominent at the tip of the glume. 6. *E. angustifolium.*
Midrib of the glumes prominent to the very tip. 7. *E. viridicarinatum.*

8. LEUCOCÒMA Ehrh. ALPINE COTTON-GRASS. 1. *L. alpina.*

9. SCÍRPUS L. BULRUSH, CLUB-RUSH, TULE.

Involucre of a single bract or wanting.
Spikelets solitary, rarely two together; plants tufted (except No. 5).
Annuals; stamens 2; bristles none. 1. *S. coloradensis.*
Perennials, with rootstocks.
Involucre none. 2. *S. pauciflorus.*
Involucre present, consisting of one erect bract.
Bract scarcely exceeding the spikelet, often shorter; bog plants.
Bristles 6, longer than the achenes. 3. *S. caespitosus.*
Bristles none. 4. *S. pumilus.*
Bract at least twice as long as the spikelet; aquatic plants. 5. *S. subterminalis.*
Spikelets normally more than one, usually several, sometimes numerous.
Spikelets few, 1–12, appearing lateral, in a single capitate cluster.
Annuals, with fibrous roots, tufted; achenes dark, transversely wrinkled.
Spikelets obtuse; achenes plano-convex. 6. *S. Hallii.*
Spikelets acute; achenes 3-angular. 7. *S. saximontanus.*
Perennials, with rootstocks; achenes plano-convex, obovate.
Stem sharply 3-angled.
Spikelets acute; bracts long; glumes awned. 8. *S. americanus.*
Spikelets obtuse; bracts short; glumes mucronate. 9. *S. Olneyi.*
Stem terete, striate. 10. *S. nevadensis.*
Spikelets numerous in small clusters of 1–7, arranged in compound umbels; perennials with stout rootstocks.
Style 2-cleft; achenes obovate and plano-convex, brown.
Achenes 2 mm. long, nearly as long as the glumes; spikelets ovoid. 11. *S. validus.*
Achenes 3 mm. long, distinctly shorter than the glumes; spikelet oblong-cylindric. 12. *S. occidentalis.*
Style 3-cleft; achenes obcordate, 3-angled, yellowish. 13. *S. heterochaetus.*
Involucre of two or more leaves with flat blades; perennials, with rootstocks.
Spikelets 3–10, capitate, relatively large. 14. *S. paludosus.*
Spikelets numerous, in compound umbels or in umbellate heads, relatively small.
Bristles downwardly barbed, not much exceeding the fruit.
Style-branches 2; achenes plano-convex; bristles mostly 4. 15. *S. microcarpus.*
Style-branches 3; achenes oblong, 3-angular; bristles 6.
Plant dark green; glumes acute; achenes pale brown. 16. *S. atrovirens.*
Plant pale; glumes rough-awned; achenes straw-colored. 17. *S. pallidus.*
Bristles 6, smooth, much exceeding the glumes at maturity; achenes 3-angled, whitish.
Spikelets all sessile; glumes brown. 18. *S. cyperinus.*
Spikelets mostly pediceled; glumes mostly greenish black. 19. *S. atrocinctus.*

10. HEMICÁRPHA Nees & Arn. 1. *H. aristulata.*

11. KOBRÈSIA Willd. 1. *K. bipartita.*

12. ELÝNA Schrad. 1. *E. Bellardi.*

13. CÀREX (Rupp.) L. SEDGE.*

Spike one, androgynous; perigynia glabrous, thin, not margined or triangular, beaked; style withering, not continuous with the achene; stigmas three.
Pistillate scales persistent; perigynia not stipitate, not becoming reflexed.
Spike linear or linear-oblong; perigynia not inflated. 1. NARDINAE.
Spike orbicular to short-ovoid; perigynia inflated. 2. INFLATAE.
Pistillate scales deciduous; perigynia stipitate, at least the lower reflexed at maturity. 3. ATHROCHLAENAE.
Spikes one to many; if one, plant not as above.
Achenes lenticular and stigmas two; lateral spikes sessile; terminal spike partly pistillate, or if staminate, the lateral spikes short, or heads dioecious.
Spike one.
Spike orbicular to short-ovoid. 4. CAPITATAE.
Spike linear. 5. DIOICAE.

Spikes more than one.
Perigynia not white-puncticulate.
Rootstocks long-creeping, the culms arising singly or few together.
Perigynia not thin or wing-margined, the beak obliquely cut.
Culms not branching.
Spikes densely aggregate into a globular-ovoid head, appearing like one spike. 6. FOETIDAE.
Spikes distinct. 7. DIVISAE.
Culms becoming decumbent and branching. 8. CHORDORRHIZAE.
Perigynia thin or wing-margined, the beak bidentate. 9. ARENARIAE.
Rootstock not long-creeping, the culms densely cespitose.
Spikes androgynous.
Perigynia abruptly contracted into the beak.
Spikes few (ten or less); perigynia green or tinged with reddish brown. 10. MUHLENBERGIANAE.
Spikes numerous; perigynia yellowish or brownish.
Perigynia yellowish; opaque part of leaf-sheath transversely rugulose. 11. MULTIFLORAE.
Perigynia brownish; opaque part of leaf-sheath not transversely rugulose. 12. PANICULATAE.
Perigynia tapering into the beak. 13. STENORHYNCHAE.
Spikes gynaecandrous or pistillate or rarely staminate.
Perigynia at most thin-edged.
Perigynia spreading at maturity. 14. STELLULATAE.
Perigynia appressed. 15. DEWEYANAE.
Perigynia narrowly to broadly wing-margined. 16. OVALES.
Perigynia white-puncticulate. 17. CANESCENTES.
Achenes triangular or lenticular; if lenticular, lower lateral spikes conspicuously peduncled, or terminal spike staminate and lateral spikes elongated.
Achenes strongly constricted at base, rounded at apex. 18. PHYLLOSTACHYAE.
Achenes not strongly constricted at base, pointed at apex.
Spike one; perigynia rounded and beakless at apex. 19. POLYTRICHOIDEAE.
Spikes one or more; when one, perigynia not both rounded and beakless at the apex.
Perigynia both coriaceous and shining, the beak obliquely cut.
Spike solitary. 20. OBTUSATAE.
Spikes several. 21. NITIDAE.
Perigynia not both coriaceous and shining.
Spike one; perigynia triangular, glabrous, not reflexed or flattened.
Perigynia prominently beaked, finely many-nerved. 22. RUPESTRES.
Perigynia nearly beakless, 2-keeled but otherwise nerveless. 23. FIRMICULMES.
Spikes one to many; when one, perigynia differing from above.
Perigynia closely enveloping the achene, strongly tapering at base, pubescent or puberulent; bracts sheathless or nearly so.
Spike normally one.
Spikes androgynous; leaf-blades very narrow. 24. FILIFOLIAE.
Spikes dioecious. 25. SCIRPINAE.
Spikes two or more. 26. MONTANAE.
Perigynia not as above; or if so, bracts strongly sheathing.
Lowest bract long-sheathing, its blades rudimentary.
Leaf-blades flat; perigynia puberulent or pubescent. 27. DIGITATAE.
Leaf-blades filiform; perigynia glabrous. 28. ALBAE.
Lowest bract sheathless or long-sheathing; if long-sheathing, its blade well-developed.
Lowest bract strongly sheathing; perigynia never strongly bidentate with stiff teeth.
Achenes lenticular; stigmas two. 29. BICOLORES.
Achenes triangular; stigmas three.
Scales not dark-tinged.
Pistillate spikes short-oblong to linear, erect.
Perigynia tapering at base, triangular, closely enveloping the achenes.
Rootstock long-creeping. 30. PANICEAE.
Rootstock not long-creeping. 31. LAXIFLORAE.
Perigynia rounded at base, suborbicular in cross-section, loosely enveloping achenes. 32. GRANULARES.
Pistillate spikes elongate, linear to cylindric, slender peduncled, the lower drooping.
Culms strongly reddish tinged at base, aphyllopodic. 33. DEBILES.
Culms not strongly reddish tinged at base, phyllopodic.

Spikes slender, few-flowered; perigynia 4 mm. long or less, not inflated, the beak not becoming bidentate. 34. CAPILLARES.
Spikes dense, many-flowered; perigynia longer, more or less inflated, the beak becoming bidentate. 35. LONGIROSTRES.
Scales dark-tinged. 36. FRIGIDAE.
Lowest bract sheathless, or sheathing; if sheathing, perigynia strongly bidentate with stiff teeth.
Foliage pubescent; perigynia not bidentate. 37. PALLESCENTES.
Foliage glabrous, or if rarely pubescent, perigynia bidentate.
Perigynia rough-papillose. 38. ANOMALAE.
Perigynia at most granular-roughened.
Perigynia beakless or very short-beaked; achenes triangular.
Perigynia glaucous. 39. LIMOSAE.
Perigynia not glaucous. 40. ATRATAE.
Perigynia with strongly bidentate beak, or if not, achenes lenticular.
Achenes lenticular; perigynia dull. 41. ACUTAE.
Achenes triangular, or if rarely lenticular, perigynia shining.
Perigynia coriaceous, little if at all inflated, often pubescent; bracts sheathless. 42. HIRTAE.
Perigcnia glabrous, often inflated; if rarely Peoriaceous, the bracts sheathing.
rigynia little inflated; lower bract strongly sheathing. 43. EXTENSAE.
Perigynia little to much inflated; lower bract not strongly sheathing.
Spike one. 44. PAUCIFLORAE.
Spikes more than one.
Perigynia finely and closely ribbed. 45. PSEUDO-CYPEREAE.
Perigynia coarsely ribbed or nerveless. 46. PHYSOCARPAE.

1. NARDINAE.

Represented by one species in our range. 1. *C. Hepburnii.*

2. INFLATAE.

Represented by one species in our range. 2. *C. Engelmannii.*

3. ATHROCHLAENAE.

Densely cespitose; leaf-blades involute, 1 mm. wide; staminate flowers few; perigynia erect until full maturity. 3. *C. pyrenaica.*
Short-stoloniferous; leaf-blades flat, 1.5 mm. wide or more; staminate flowers conspicuous; perigynia early deflexed. 4. *C. nigricans.*

4. CAPITATAE.

Represented by one species. 5. *C. capitata.*

5. DIOICAE.

Represented by one species in our range. 6. *C. gynocrates.*

6. FOETIDAE.

Leaf-blades 2–3.5 mm. wide; perigynium little exceeding the scale at maturity. 7. *C. vernacula.*
Leaf-blades 1.5 mm. wide or less; perigynium much exceeding the scale at maturity.
Perigynia membranous, not stipitate. 8. *C. perglobosa.*
Perigynia not membranous, stipitate. 9. *C. incurviformis.*

7. DIVISAE.

Rootstocks slender, light brownish; culms obtusely triangular, normally smooth; leaf-blades narrowly involute.
Perigynia long-beaked; heads dioecious or nearly so. 10. *C. Douglasii.*
Perigynia short-beaked; heads androgynous. 11. *C. stenophylla.*
Rootstocks stout; culms acutely triangular, normally rough above.
Perigynia not strongly nerved ventrally; leaf-sheaths hyaline.
Perigynia chestnut, thick, the beak about one-fifth as long as the body. 12. *C. simulata.*
Perigynia blackish in age, plano-convex, the beak one-third to one-half as long as the body. 13. *C. praegracilis.*
Perigynia strongly nerved ventrally; upper leaf-sheaths green-striate opposite the blades. 14. *C. Sartwellii.*

8. CHORDORRHIZAE.

Represented by one species in our range. 15. *C. chordorrhiza.*

9. ARENARIAE.

Represented by one species in our range. 16. *C. siccata.*

10. Muhlenbergianae.

Sheaths tight, inconspicuously, if at all, septate-nodulose.
Densely cespitose; head ovoid, capitate; perigynia serrulate to the middle. 17. *C. Hoodii.*
Rootstocks elongate; head linear, interrupted; perigynia serrulate at the apex only.
Scales obtuse to short-cuspidate, not concealing the spreading perigynia.
Spikes with conspicuous staminate flowers; scales half as long as the perigynia. 18. *C. vallicola.*
Spikes with inconspicuous staminate flowers; scales about as long as the perigynia. 19. *C. occidentalis.*
Scales strongly cuspidate, concealing the appressed perigynia. 20. *C. Hookeriana.*
Sheaths loose and membranous, easily breaking, conspicuously septate-nodulose. 21. *C. gravida.*

11. Multiflorae.

Represented by one species in our range. 22. *C. vulpinoidea.*

12. Paniculatae.

Culms loosely cespitose; sheaths not copper-tinged at the mouth; head little interrupted; perigynia 2–2.75 mm. long, shining, not concealed by the scales. 23. *C. diandra.*
Culms densely cespitose; sheaths copper-tinged at the mouth; head interrupted; perigynia 2.5–4 mm. long, dull, concealed by the scales.
Leaves 1–2.5 mm. wide; perigynia 2.5–3 mm. long; scales tinged with reddish brown. 24. *C. prairea.*
Leaves 2.5–6 mm. wide; perigynia 3–4 mm. long; scales chestnut-tinged. 25. *C. Cusickii.*

13. Stenorhynchae.

Perigynia 3–4 mm. long, the beak much shorter than the body: scales strongly dark-tinged.
Leaves clustered at base; sheaths not cross-rugulose ventrally; culms slender. 26. *C. Jonesii.*
Leaves not clustered at base; sheaths cross-rugulose ventrally; culms stout. 27. *C. nervina.*
Perigynia 4–6 mm. long, the beak longer than the body; scales not dark-tinged. 28. *C. stipata.*

14. Stellulatae.

Spikes in a small (6–10 mm. long) densely capitate brownish black head. 29. *C. illota.*
Spikes more or less widely separate, not brownish black.
Perigynia broadest in middle, the beak sparingly serrulate; culms weak. 30. *C. laeviculmis.*
Perigynia broadest near base, the beak strongly serrulate; culms stiff.
Beak of the perigynia one-fourth as long as the body, the teeth short, and ventral suture inconspicuous. 31. *C. interior.*
Beak of the perigynia longer, strongly bidentate, the ventral suture conspicuous. 32. *C. angustior.*

15. Deweyanae.

Culms densely cespitose; perigynia tapering at base, 4–5 mm. long, the upper part of the body covered by translucent scale. 33. *C. Deweyana.*
Rootstocks slender, elongate; perigynia substipitate, 3.5–4.5 mm. long.
Perigynia shallowly bidentate, the upper part of body not covered by the scale. 34. *C. leptopoda.*
Perigynia deeply bidentate, the body covered by the scale. 35. *C. Bolanderi.*

16. Ovales.

Lower bract or bracts conspicuous, several–many times the length of the head.
Perigynia subulate, the beak much longer than body; lower bracts more than 1 dm. long, without yellowish brown margins at base. 36. *C. sychnocephala.*
Perigynia lance-ovate, the beak shorter than the body; longer bracts less than 1 dm. long, with yellowish brown margins at base.
Perigynia nerveless ventrally, tawny at orifice. 37. *C. athrostachya.*
Perigynia nerved ventrally, hyaline at orifice. 38. *C. tenuirostris.*
Bracts not conspicuous, rarely slightly exceeding the head.
Beak of the perigynia flattened and serrulate to tip, often strongly bidentate.
Scales about the length of the perigynia and nearly of the same width above, the perigynia nearly entirely concealed.
Head stiff, the spikes approximate.
Perigynia less than 5.5 mm. long, at most faintly nerved on inner face, loosely ascending; spikes suborbicular; lower bracts prominent, stiff. 39. *C. adusta.*
Perigynia 5.5–7 mm. long, finely many-nerved on inner face, appressed; spikes oblong-elliptic; bracts not stiff. 40. *C. petasata.*
Head not stiff, flexuous or moniliform. 41. *C. aenea.*
Scales shorter than perigynia and noticeably narrower above, the upper part of perigynia largely exposed.
Perigynia subulate to lanceolate, at least 2½ times as long as wide.
Perigynia subulate, the margin at the base almost obsolete. 42. *C. Crawfordii.*
Perigynia lanceolate, the margin conspicuous to the base. 43. *C. scoparia.*

Perigynia ovate-lanceolate or broader, at most twice as long as wide.
Perigynia narrowly to broadly ovate, 3–4 mm. long.
Perigynia brownish; spikes closely aggregate, rounded at base. 44. *C. Bebbii.*
Perigynia green; spikes contiguous to widely separate, usually tapering at base.
Leaf-blades 2.5 mm. wide or less; perigynia spreading-ascending; culms slender. 45. *C. tenera.*
Leaf-blades 2–6 mm. wide (averaging 4 mm.); perigynia appressed-ascending; culms stout. 46. *C. tincta.*
Perigynia ovate or broader, 3.75–6 mm. long.
Perigynia thick, abruptly short-beaked; scales little, if at all, tinged with brownish red. 47. *C. brevior.*
Perigynia thin, tapering to the beak; scales strongly tinged with chestnut-brown. 48. *C. Egglestonii.*
Beak of the perigynia slender, terete and scarcely, if at all, serrulate towards tip, obliquely cut, at times becoming obscurely bidentate.
Scales about the length of the perigynia, and of nearly the same width above, the perigynia nearly entirely concealed.
Culms and head stiff and rigid.
Culms 1–3 dm. high, in large stools; scales strongly tinged with reddish brown; perigynia lanceolate. 49. *C. phaeocephala.*
Culms taller, not in large stools; scales lighter-colored; perigynia ovate, in age golden yellow at base. 50. *C. xerantica.*
Culms slender; head flexuous or moniliform.
Scales light reddish brown tinged. 51. *C. practicola.*
Scales chestnut-brown tinged. 52. *C. Piperi.*
Scales shorter than perigynia and noticeably narrower above, the upper part of perigynia largely exposed.
Perigynia thin and membranous, except where distended by the achene.
Perigynia 3.5–5 mm. long; culms slender.
Perigynia lance-ovate, very narrowly margined, spreading; culms biennial. 53. *C. microptera.*
Perigynia ovate, strongly margined, appressed; culms annual. 54. *C. festivella.*
Perigynia 4.5–6 mm. long; culms low.
Perigynia lanceolate to broadly ovate, nerveless or nearly so on inner face, the beaks conspicuous; culms slender, ascending or decumbent. 55. *C. nubicola.*
Perigynia narrowly lanceolate, finely nerved on inner face, the beaks appressed; culms stiff, erect. 56. *C. ebenea.*
Perigynia strongly plano-convex, the walls thick.
Spikes densely capitate; beak of the perigynia obliquely cut, dark-tipped. 57. *C. pachystachya.*
Spikes not capitate; beak of the perigynia bidentate, reddish-tipped. 58. *C. Preslii.*

17. CANESCENTES.

Spikes androgynous; perigynia unequally biconvex. 59. *C. disperma.*
Spikes gynaecandrous; perigynia plano-convex.
Lowest bract bristle-like, much prolonged, many times exceeding its 1–5-flowered spike; spikes widely separate. 60. *C. trisperma.*
Lowest bract much shorter or none; spikes several–many-flowered, the upper approximate.
Spikes 2–4, subglobose, closely approximate, forming an ovate or subglobose head; perigynia scarcely beaked; scales white-hyaline. 61. *C. tenuiflora.*
Spikes one–many, the lower more or less strongly separate; head elongate; perigynia shortly to strongly beaked; scales darker.
Perigynia broadest near middle; beak short, smooth or moderately serrulate.
Beak of the perigynia smooth or very nearly so; scales obtuse to acutish, strongly tinged with reddish brown or chestnut; spikes closely approximate.
Terminal spike strongly tapering at base; culms rough at apex only. 62. *C. Lachenalii.*
Terminal spike little tapering at the base; culms usually very rough. 63. *C. Heleonastes.*
Beak of the perigynia serrulate, or if smooth scales acutish to cuspidate and scarcely, if at all, tinged with reddish brown; lower spikes remote.
Plant glaucous; leaf-blades 2–4 mm. wide; spikes many-flowered; perigynia scarcely beaked, appressed ascending, with emarginate or entire orifice. 64. *C. canescens.*
Plant not glaucous; leaf-blades 1–2.5 mm. wide; spikes fewer-flowered; perigynia distinctly beaked, loosely spreading, with minutely bidentate orifice. 65. *C. brunnescens.*
Perigynia ovate, broadest near the base; beak conspicuous, strongly serrulate. 66. *C. arcta.*

18. PHYLLOSTACHYAE.

Perigynia with long smooth beak; foliage deep green. 67. *C. durifolia.*
Perigynia with short sparingly serrulate beak; foliage light or glaucous green. 68. *C. saximontana.*

19. POLYTRICHOIDEAE.

Represented by one peciess. 69. *C. leptalea.*

20. OBTUSATAE.

Represented by one species. 70. *C. obtusata.*

21. NITIDAE.

Represented by one species in our range. 71. *C. supina.*

22. RUPESTRES.

Represented by one species. 72. *C. rupestris.*

23. FIRMICULMES.

Represented by one species in our range. 73. *C. Geyeri.*

24. FILIFOLIAE.

Leaf-blades filiform at base, 0.25–0.5 mm. wide; culms filiform, obtusely triangular, smoothish; lowest scale rarely awned.
Perigynia sharply triangular below, obpyramidal; basal sheaths rarely filamentose. 74. *C. elynoides.*
Perigynia rounded on the angles, obovoid to globose; basal sheaths filamentose. 75. *C. filifolia.*
Leaf-blades flattened at base, 1.5–2 mm. wide; culms stoutish, sharply triangular, often much roughened; lowest scale conspicuously awned. 76. *C. oreocharis.*

25. SCIRPINAE.

Culms phyllopodic, the culm-leaves 6–10; scales concealing perigynia. 77. *C. pseudoscirpoidea.*
Culms aphyllopodic, the culm-leaves 3–6; scales shorter than perigynia.
Perigynia lanceolate, flattish, 4 mm. long. 78. *C. stenochlaena.*
Perigynia broader, triangular, 3 mm. long or less.
Scales very minutely hyaline-margined; perigynia whitish-pubescent. 79. *C. scirpoidea.*
Scales very broadly hyaline-margined; perigynia yellowish-hirsute. 80. *C. scirpiformis.*

26. MONTANAE.

Basal spikes absent.
Long stoloniferous; scales about equalling the perigynia. 81. *C. heliophila.*
Without long stolons; scales much shorter than the perigynia. 82. *C. Peckii.*
Basal spikes present.
Lower bract exceeded by the culm, scale-like, hyaline-margined at base. 83. *C. umbellata.*
Lower bract normally exceeding the culm, leaf-like, not hyaline-margined at base.
Perigynia 2.75 mm. long or less, shallowly bidentate; rootstocks slender. 84. *C. deflexa.*
Perigynia longer, deeply bidentate; culms densely cespitose. 85. *C. Rossii.*

27. DIGITATAE.

Basal spikes present; scales abruptly cuspidate. 86. *C. pedunculata.*
Basal spikes absent; scales not abruptly cuspidate.
Staminate spike 3–6 mm. long; scales obtuse, one-half as long as the perigynia. 87. *C. concinna.*
Staminate spike 8–22 mm. long; scales acute to acuminate, from little shorter than to exceeding the perigynia.
Perigynia loosely pubescent, wider and longer than the scales; staminate spike nearly sessile; pistillate spikes few-flowered. 88. *C. concinnoides.*
Perigynia appressed-pubescent, narrower and shorter than the scales; staminate spike noticeably peduncled; pistillate spikes many-flowered. 89. *C. Richardsonii.*

28. ALBAE.

Represented by one species in our range. 90. *C. eburnea.*

29. BICOLORES.

Mature perigynia whitish, ellipsoid, not fleshy or translucent. 91. *C. Hassei.*
Mature perigynia orange or brownish, broader, fleshy, translucent. 92. *C. aurea.*

30. PANICEAE.

Beak of the perigynia none or very short.
Sheaths of the bracts short; plant glaucous; leaf-blades involute; spikes approximate. 93. *C. livida.*
Sheaths of the bracts long; plant not glaucous; leaf-blades flat; spikes distant.
Fertile culm-blades 3–5, 2–3.5 mm. wide; perigynia 3.5 mm. long or less; spikes linear. 94. *C. tetanica.*
Fertile culm-blades 6–10, 3–7 mm. wide; perigynia longer; spikes oblong or linear-oblong. 95. *C. Meadii.*
Beak of the perigynia straight, prominent. 96. *C. vaginata.*

31. LAXIFLORAE.

Represented by one species in our range. 97. *C. blanda.*

32. GRANULARES.

Plants cespitose; bracts elongate, overtopping the spikes; staminate spike short-stalked. 98. *C. Shriveri.*
Plants with long-creeping rootstocks; bracts short, rarely overtopping the spikes; staminate spike long-stalked. 99. *C. Crawei.*

33. DEBILES.

Represented by one species in our range. 100. *C. Assiniboinensis.*

34. CAPILLARES.

Represented by one species in our range. 101. *C. capillaris.*

35. LONGIROSTRES.

Represented by one species in our range. 102. *C. Sprengelii.*

36. FRIGIDAE.

Terminal spike staminate or gynaecandrous, the lateral ones pistillate.
Terminal spike usually gynaecandrous, the lateral ones ovoid or short-oblong. 103. *C. misandra.*
Terminal spike staminate (or with a few perigynia), the lateral ones oblong or linear-cylindric.
Perigynia triangular, slightly compressed. 104. *C. luzulina.*
Perigynia strongly compressed. 105. *C. fissuricola.*
Terminal spike androgynous, the upper lateral staminate, the lower pistillate.
Perigynia lanceolate, 1.5 mm. wide, tapering to the apex; spikes 2–5, usually 4. 106. *C. petricosa.*
Perigynia oblong-oval, 2.25 mm. wide, abruptly minutely beaked; spikes more numerous. 107. *C. Franklinii.*

37. PALLESCENTES.

Represented by one species in our range. 108. *C. abbreviata.*

38. ANOMALAE.

Represented by one species in our range. 109. *C. amplifolia.*

39. LIMOSAE.

Pistillate spikes drooping.
Plants strongly stoloniferous; leaf-blades involute, glaucous, 3 mm. wide or less; scales little exceeding the perigynia. 110. *C. limosa.*
Plant tufted; leaf-blades flat, not glaucous, wider; scales much exceeding the perigynia. 111. *C. paupercula.*
Pistillate spikes erect. 112. *C. Buxbaumii.*

40. ATRATAE.

Terminal spike in some plants pistillate and linear-cylindric or staminate only at apex, in others staminate.
Scales not long-pointed, little exceeding the perigynia; perigynia flattened, sharp-edged. 113. *C Parryana.*
Scales long-pointed, 2–3 times as long as the perigynia; perigynia little flattened. 114. *C. idahoa.*
Terminal spike staminate or gynaecandrous, not pistillate and linear-cylindric.
Terminal spike staminate.
Culms few-leaved, strongly aphyllopodic, purplish tinged at base.
Staminate scales obtuse, the midvein nearly or quite obsolete.
Staminate scales obovate; pistillate scales with obsolete (or nearly so) midvein; perigynia nerveless. 115. *C. podocarpa.*
Staminate scales linear-lanceolate; pistillate scales with strong midvein; perigynia 2-nerved. 116. *C. venustula.*
Staminate scales with conspicuous more or less excurrent midvein. 117. *C. spectabilis.*
Culms many-leaved, clothed at base with dried-up leaves of previous year, not purplish tinged at base.
Perigynia flat. 118. *C. Tolmiei.*
Perigynia round in cross-section, many-nerved. 119. *C. Raynoldsii.*
Terminal spike gynaecandrous.
Perigynia triangular in cross-section, nerveless or nearly so, 2.5 mm. long or less. 120. *C. Halleri.*
Perigynia longer, many-nerved or with two prominent marginal nerves, more or less strongly flattened.
Spikes contiguous, sessile or short-peduncled, forming a dense head; culms stiff, erect.
Perigynia subinflated-triangular, scarcely compressed, the beak 1 mm. long. 121. *C. Nelsonii.*
Perigynia strongly compressed, the beak 0.5 mm. long.
Lowest spike slightly separate, short-peduncled; scales black, with very conspicuous white hyaline apex and upper margins. 122. *C. albo-nigra.*
Spikes closely contiguous and sessile; scales black with inconspicuous hyaline apex and margins. 123. *C. nova.*
Lowest spike (or spikes) strongly peduncled, usually distant, erect or nodding.
Spikes 3–5, not oblong-cylindric; walls of the perigynia not papery; perigynia 2.5–4.5 mm. long, nerveless or obscurely nerved on the face, dull green to brownish black; scales from a little shorter to a little longer than the perigynia.
Perigynia slightly inflated and sub-triangular, not strongly compressed. 124. *C. atrosquama.*
Perigynia strongly compressed.
Perigynia sharp-edged, the margins much narrower than the achene; lateral spikes linear.
Scales shining, with the midvein conspicuous the whole length, exceeded by the perigynia. 125. *C. bella.*

Scales dull with inconspicuous midvein, about covering the perigynia. 126. *C. atratiformis.*
Perigynia widely margined, the margins as wide as the achene; lateral spikes oblong or linear-oblong or ovoid.
Perigynia granular-roughened; achenes short-stipitate.
Upper pistillate scales exceeding the perigynia; lateral spikes ovoid; lowest peduncle less than the length of the spike. 127. *C. chalciolepis.*
Upper pistillate scales exceeded by the perigynia; lateral spikes oblong or linear-oblong; lowest peduncle 1–2 times as long as the spike. 128. *C. atrata.*
Perigynia smooth; achenes strongly stipitate. 129. *C. epapillosa.*
Spikes 6–10, oblong-cylindric: walls of the perigynia papery; perigynia 5 mm. long, lightly 3-nerved, light green, much shorter than the perigynia. 130. *C. Mertensii.*

41. ACUTAE.

Culms phyllopodic.
Beak of the perigynia, if present, not deeply bidentate.
Lowest bract exceeded by the inflorescence; scales with obsolete or slender midvein; culms low, stiff, solitary or in small clumps, freely stoloniferous.
Perigynia plano-convex, puncticulate, appressed. 131. *C. concolor.*
Perigynia soon turgid, papillose, spreading.
Scales ovate, exceeded by the perigynia. 132. *C. scopulorum.*
Scales lanceolate, exceeding the perigynia. 133. *C. chimaphila.*
Lowest bract exceeding the inflorescence; scales usually with a slender midvein or broad light-colored center; culms taller, less stiff, in larger clumps.
Perigynia turgid, spreading. 134. *C. aperta.*
Perigynia not turgid, appressed or ascending.
Stolons absent; perigynia conspicuously nerved; leaf-blades 1–3 mm. wide.
Perigynia substipitate, glaucous, granular-roughened all over, the body two-thirds as wide as long. 135. *C. lenticularis.*
Perigynia strongly stipitate, green, granular-roughened at the apex only, the body half as wide as long. 136. *C. Kelloggii.*
Stolons present, long; perigynia nerveless or inconspicuously nerved; leaf-blades 2–6 mm. wide.
Perigynia narrowly to very broadly elliptic, broadest below apex, less than 3 mm. long, 1–1.5 mm. wide. 137. *C. aquatilis.*
Perigynia strongly obovate, broadest at the apex, 3 mm. long, 1.75 mm. wide. 138. *C. substricta.*
Beak of the perigynia markedly bidentate, the body strongly ribbed. 139. *C. nebraskensis.*
Fertile culms aphyllopodic.
Lower sheaths smooth; scales not blackish. 140. *C. Emoryi.*
Lower sheaths strongly hispidulous; scales blackish. 141. *C. prionophylla.*

42. HIRTAE.

Beak of the perigynia much shorter than the body, the teeth 1 mm. long or less.
Perigynia glabrous to sparsely pubescent. 142. *C. lacustris.*
Perigynia densely or strongly pubescent.
Nerves of the perigynia obscured by pubescence, the teeth of beak short.
Leaf-blades flat, more than 2 mm. wide. 143. *C. lanuginosa.*
Leaf-blades involute, 2 mm. wide or less. 144. *C. lasiocarpa.*
Nerves of the perigynia prominent, the teeth of beak prominent, slender. 145. *C. Houghtonii.*
Beak of the perigynia including teeth nearly as long as body, the teeth 1.5 mm. long or more.
Perigynia glabrous.
Perigynia ovoid, the teeth less than 2 mm. long, erect or spreading; scales acute to aristate; leaf-blades glabrous. 146. *C. laeviconica.*
Perigynia lanceolate or ovoid-lanceolate, the teeth 2–4 mm. long, widely spreading; scales long-aristate; leaf-blades pubescent beneath. 147. *C. atherodes*
Perigynia hairy. 148. *C. Sheldonii.*

43. EXTENSAE.

Perigynia 2–3 mm. long, the beak scarcely half as long as the body. 149. *C. viridula.*
Perigynia 4–6 mm. long, the beak about as long as the body. 150. *C. flava.*

44. PAUCIFLORAE.

Rhacheola present, conspicuously exserted; culms with many leaves. 151. *C. microglochin.*
Rhacheola absent or rudimentary, not conspicuously exserted; culms with few leaves. 152. *C. pauciflora.*

45. PSEUDO-CYPEREAE.

Perigynia suborbicular in cross-section, more or less inflated. 153. *C. hystricina.*
Perigynia obtusely triangular, scarcely inflated, closely enveloping achene. 154. *C. comosa.*

46. PHYSOCARPAE.

Perigynia scarcely inflated; beak entire or emarginate; stigmas normally two and achenes lenticular.
Perigynia lanceolate; fertile culms filamentose at the base; rootstocks creeping. 155. *C. miliaris.*

Perigynia ovoid; fertile culms rarely if ever filamentose at the base; plant loosely stoloniferous. 156. *C. saxatilis.*
Perigynia from little to much inflated; beak bidentate; stigmas normally three and achenes triangular.
Pistillate spikes globose or short-oblong, 5–15-flowered. 157. *C. oligosperma.*
Pistillate spikes oblong to cylindric, 15–many-flowered.
Lower perigynia not reflexed; bracts moderately exceeding the spikes.
Perigynia ascending; lower sheaths more or less strongly filamentose; culms sharply triangular.
Perigynia 6–8 mm. long.
Perigynia oblong-ovoid, tapering into the beak; spikes loosely flowered at base. 158. *C. Raeana.*
Perigynia ovoid or globose-ovoid, contracted into the beak; spikes more closely flowered. 159. *C. vesicaria.*
Perigynia 8–10 mm. long, tapering into the beak. 160. *C. exsiccata.*
Perigynia spreading at maturity; lower sheaths not filamentose; culms bluntly triangular below the spikes. 161. *C. rostrata.*
Lower perigynia reflexed; bracts many times exceeding the spikes. 162. *C. retrorsa.*

Family 14. **ARACEAE.** Arum Family.

Spadix terminal, with an oblong sheathing spathe; leaves petioled, with broad blades. 1. Lysichiton.
Spadix borne somewhat laterally on the leaf-like scape; spathe leaf-like, continuous to the scape; leaves narrowly linear, equitant. 2. Acorus.

1. LYSÍCHITON Schott. Skunk Cabbage. 1. *L. kamtschatcensis.*

2. ÁCORUS L. Sweet Flag, Calamus-root. 1. *A. Calamus.*

Family 15. **LEMNACEAE.** Duckweed Family.

Rootlets solitary, without a fibro-vascular bundle. 1. Lemna.
Rootlets several, each with a fibro-vascular bundle. 2. Spirodela.

1. LÉMNA L. Duckweed.

Fronds long-stalked, mostly submerged, forming large masses 1. *L. trisulca.*
Fronds short-stalked or sessile, floating on the surface.
Frond pale and usually strongly gibbous beneath. 2. *L. gibba.*
Fronds green or purplish, not gibbous beneath.
Frond oblong-obovate, indistinctly 3-nerved. 3. *L. minor.*
Frond oblong or elliptical, indistinctly 1-nerved or nerveless.
Frond unsymmetrical, without papules. 4. *L. cyclostasa.*
Frond symmetrical, with a row of papules along the midvein. 5. *L. minima.*

2. SPIRODÈLA Schleiden. Larger Duckweed. 1. *S. polyrhiza.*

Family 16. **COMMELINACEAE.** Spiderwort Family.

Petals all alike; perfect stamens 6; bracts leaf-like. 1. Tradescantia.
Petals unlike in shape and size; perfect stamens 3 or 2; bracts spathe-like. 2. Commelina.

1. TRADESCÁNTIA (Rupp.) L. Spiderwort.

Sepals glandular-pilose; petals about 15 mm. long; capsule decidedly ellipsoid.
Bracts broader than the leaves, strongly gibbous at the base; stem 2–3 dm. high, usually simple; pod densely glandular. 1. *T. bracteata.*
Bracts not broader than the leaves, not strongly gibbous at the base; stem usually over 3 dm. high, branched.
Pod densely glandular-pubescent; sepals broadly lanceolate, densely glandular; plant bright green; branches shorter than the stem proper. 2. *T. occidentalis.*
Pod glabrate, pubescent only in lines or at the apex.
Pedicels strongly glandular; pods pubescent in lines; branches almost equalling the stem. 3. *T. larimiensis.*
Pedicels glabrous or slightly glandular above; pods pubescent only at the apex. 4. *T. universitatis.*
Sepals glabrous or nearly so; petals about 10 mm. long; capsule subglobose. 5. *T. scopulorum.*

2. COMMELÌNA (Plum.) L. Day-flower, Dew-flower. 1. *C. crispa.*

Family 17. **PONTEDERIACEAE.** Pickerel-weed Family.

Stamens unequal, the 2 posterior ones with ovate anthers, the third with a sagittate anther; capsule incompletely 3-celled; leaf-blades broad, long-petioled. 1. Heteranthera.
Stamens all alike; anthers all sagittate; capsule 1-celled, with 3 parietal placentae; leaf-blades linear, translucent, sessile. 2. Zosterella.

1. HETERÁNTHERA R. & P. Mud-plantain. 1. *H. limosa.*

2. ZOSTERÉLLA Small. Water Star-grass. 1. *Z. dubia.*

Family 18. **MELANTHACEAE.** Bunch-flower Family.

Plants with rootstocks (except in No. 3); petals and sepals glandless.
- Anthers oblong or ovate, 2-celled.
  - Anthers introrse; flowers involucrate with 3 bractlets. 1. Tofieldia.
  - Anthers extrorse; flowers not involucrate. 2. Xerophyllum.
- Anthers cordate or reniform, confluently 1-celled.
  - Flowers racemose, perfect, nodding; plants glabrous, with narrow leaves. 3. Stenanthella.
  - Flowers paniculate, polygamous; more or less pubescent plants, with broad plaited leaves. 4. Veratrum.

Plants with bulbs; petals and sepals with a more or less distinct gland.
- Ovary partly inferior; gland obcordate. 5. Anticlea.
- Ovary wholly superior; gland obovate or semiorbicular. 6. Toxicoscordion.

1. **TOFIÈLDIA** Huds. Scottish Asphodel.

Stem glabrous, scapiform; seed unappendaged.
- Stem leafy at the base only; flowers short-pedicelled. 1. *T. palustris.*
- Stem with a leaf also at or above the middle; flowers sessile. 2. *T. coccinea.*

Stem viscid-pubescent, at least above; seeds appendaged.
- Bractlets broadly triangular, connate two-thirds their length. 3. *T. intermedia.*
- Bractlets lanceolate-triangular, connate half their length or less. 4. *T. occidentalis.*

2. **XEROPHÝLLUM** Michx. Turkey-beard, Bear-grass, Moose-grass, Pine-grass.

Petals and sepals 7–10 mm. long. 1. *X. tenax.*
Petals and sepals 4–6 mm. long. 2. *X. Douglasii.*

3. **STENANTHÉLLA** Rydb. 1. *S. occidentalis.*

4. **VERÀTRUM** (Tourn.) L. White Hellebore, False Hellebore, Skunk Cabbage.

Flowers greenish; bractlets foliaceous, often equalling or exceeding the flowers. 1. *V. Eschscholtzii.*

Flowers white or yellowish white; bractlets membranous, much shorter than the pedicels and flowers.
- Petals and sepals oval or broadly oblanceolate. 2. *V. speciosum.*
- Petals and sepals narrowly oblanceolate. 3. *V. tenuipetalum.*

5. **ANTICLÈA** Kunth. White Camas.

Base of the stem not covered by conspicuous scarious sheaths; plant not tufted.
- Petals and sepals greenish, the former more or less contracted into a broad claw. 1. *A. chlorantha.*
- Petals and sepals white or straw-colored, greenish only on the midrib, not at all clawed.
  - Petals and sepals 7–13-nerved.
    - Stem more or less leafy, 3–6 dm. high; petals white, 7–8 mm. long. 2. *A. elegans.*
    - Stem scapiform, 1–2 dm. high; petals straw-colored, 5–6 mm. long. 3. *A. alpina.*
  - Petals and sepals 5–6 mm. long, 3–7-nerved.
    - Inflorescence usually simple, few-flowered; petals and sepals usually nearly 6 mm. long; flowers not recurved after anthesis. 4. *A. coloradensis.*
    - Inflorescence branched, many-flowered; petals and sepals rarely exceeding 5 mm. in length; flowers reflexed just after anthesis. 5. *A. porrifolia.*

Base of the stem covered by numerous, conspicuous, scarious sheaths; plant growing in big clumps. 6. *A. vaginata.*

6. **TOXICOSCÒRDION** Rydb. Poison Camas, Death Camas.

Petals and sepals rounded or obtuse at the apex.
- Upper leaves without sheaths at the base; both petals and sepals distinctly clawed and subcordate at the base; gland with a thick, toothed margin. 1. *T. venenosum.*
- All leaves with distinct sheaths; petals long-clawed and subcordate at the base; sepals subsessile; margin of the gland ill-defined. 2. *T. gramineum.*

Petals and sepals acute or acuminate at the apex; all leaves with sheaths; sepals cuneate at the base and short-clawed or subsessile.
- Leaves less than 5 mm. wide; petals and sepals both cuneate at the base and short-clawed. 3. *T. acutum.*
- Leaves over 5 mm. wide.
  - Raceme simple; petals comparatively long-clawed and subcordate at the base. 4. *T. falcatum.*
  - Raceme branched; petals short-clawed, not subcordate at the base. 5. *T. paniculatum.*

19. Family **JUNCACEAE.** Rush Family.

Leaf-sheaths open; capsule 1–3-celled, with axile or parietal placentae; seeds many. 1. Juncus.

Leaf-sheaths closed; capsule 1-celled, with basal placentae; seeds 3. 2. Juncoides.

1. JÚNCUS (Tourn.) L. RUSH, WIRE-GRASS.

Lower bracts of the inflorescence terete, erect, appearing like a continuation of the stem; inflorescence therefore apparently lateral; stamens 6.
Flowers several in a more or less compound panicle; seeds apiculate or acute; perennials with long rootstocks. I. EFFUSI.
Flowers 1–5, of which one is subsessile and the others peduncled; seeds caudate, *i. e.*, with white tails at each end; densely cespitose perennials. II. SUBTRIFLORI.
Lower bracts not appearing as a continuation of the stem, or if so, channeled on the upper side; inflorescence terminal.
Leaves neither septate nor equitant.
Leaves not fistulose.
Flowers many.
Flowers bracteolate, inserted singly on the branches of the inflorescence; leaves narrowly linear, either flat or subterete and channeled; stamens 6.
Perennials, with short cespitose rootstocks; stems simple. III. TENUES.
Annuals; stem branching; seed apiculate. IV. BUFONII.
Flowers not bracteolate, in true heads on the branches of the inflorescence; leaves flat, often grass-like; perennials with stoloniferous rootstocks. VI. GRAMINIFOLII.
Flowers solitary on the scape; plant 2–3 cm. high. VII. UNCIALES.
Leaves fistulose (*i. e.*, hollow); flowers few in small heads; lower sheath bladeless; seeds caudate; stamens 6. V. CASTANEI.
Leaves septate.
Leaves terete, not equitant.
Septa poorly developed; heads 1–3. V. CASTANEI.
Septa well developed; heads usually several (in *J. Mertensianus* usually only one). VIII. NODOSI.
Leaves equitant, laterally flattened so that one edge is towards the stem; seeds apiculate; perennials with creeping rootstocks. IX. ENSIFOLII.

I. EFFUSI.

Stem light green, striate when dry on account of the free hypodermal fibro-vascular bundles; sepals and petals green. 1. *J. filiformis.*
Stem dark green or at the base purplish, not striate; sepals and petals brown.
Stem terete; sheath naked or merely bristle-pointed; sepals and petals dark purplish brown.
Inflorescence congested; branches 1–3 cm. long; petals and sepals acute or short-acuminate, almost equal in length. 2. *J. ater.*
Inflorescence open; branches 4–7 cm. long; sepals long-acuminate, much exceeding the acute petals. 3. *J. vallicola.*
Stem flattened; uppermost sheath often leaf-bearing; sepals and petals not very dark brown. 4. *J. mexicanus.*

II. SUBTRIFLORI.

Upper sheaths merely bristle-pointed; petals and sepals with green backs and dark brown margins. 5. *J. Drummondii.*
Upper sheaths leaf-bearing; green backs of the petals and sepals less prominent.
Sepals and petals linear-lanceolate, light brown; capsule acute. 6. *J. Parryi.*
Sepals and petals broadly lanceolate, very dark brown; capsule retuse. 7. *J. Hallii.*

III. TENUES.

Seeds long-caudate; leaves terete with a shallow groove above. 8. *J. Vaseyi.*
Seeds apiculate, not caudate; leaves flat, but usually involute, lunate in section.
Auricles at the summit of the sheaths membranous, whitish.
Auricles scarcely produced beyond the insertion, scarcely scarious; petals and sepals scarcely spreading.
Perianth 3–4 mm. long, equalling the capsule. 9. *J. interior.*
Perianth 4.5–5 mm. long, exceeding the capsule. 10. *J. arizonicus.*
Auricles conspicuously produced beyond the point of insertion.
Capsule oblong, narrow, 3-celled, equalling the perianth or nearly so; sepals and petals erect or appressed.
Stem stout; leaves short and broad (1.5–2 mm. wide); sepals and petals 4–5 mm. long, scarious at the base only, stramineous; flowers in an open cyme. 11. *J. brachyphyllus.*
Stem slender; leaves narrow and long; sepals and petals 3.5–4 mm. long, scarious to the apex, fuscous; flowers few, congested. 12. *J. confusus.*
Capsule ovate or oval, 1-celled, three-fourths as long as the petals or less; petals and sepals spreading. 13. *J. tenuis.*
Auricles cartilaginous, yellowish brown; inflorescence greenish; capsule ovate; petals and sepals spreading. 14. *J. Dudleyi.*

IV. BUFONII.

Capsule oblong to ovoid, trigonous, 3–4.5 mm. long, at maturity closely embraced by the ascending petals. 15. *J. bufonius.*
Capsule subglobose or short-ovoid, 2–3 mm. long; petals and sepals at maturity loosely spreading, ascending, or squarrose. 16. *J. sphaerocarpus.*

V. CASTANEI.

Stem leafy only at the base, but the uppermost leaf often with a long sheath; perianth about 4 mm. long; leaves about 1 mm. in diameter; rootstock short, cespitose.

Lowest bract of the inflorescence more or less membranaceous, spreading; capsule obtuse or mucronate. 17. *J. triglumis.*
Lowest bract of the inflorescence foliaceous, erect; capsule deeply retuse. 18. *J. biglumis.*
Stem more or less leafy; leaves about 2 mm. in diameter; perianth 5–6 mm. long; rootstock longer, stoloniferous. 19. *J. castaneus.*

VI. Graminifolii.

Seeds caudate; ligules with lanceolate, acute auricles at the summit.
Stem slender, 3–5 dm. high; leaves 5–20 cm. long; auricles about 1 mm. long. 20. *J. Regelii.*
Stem about 2 dm. high; leaves 3–6 cm. long, spreading; auricles of the ligules about 2 mm. long. 21. *J. Jonesii.*
Seeds not caudate; ligules with rounded auricles or none.
Leaves long, erect; auricles present. 22. *J. longistylis.*
Leaves short and broad, ascending, spreading; auricles none. 23. *J. orthophyllus.*

VII. Uncriales.

One species. 24. *J. uncialis.*

VIII. Nodosi.

Stamens 6; seeds not caudate, or slightly so in *J. Mertensianus* and *J. nevadensis;* perennials with creeping rootstocks.
Inflorescence with short branches; flowers echinate-spreading or the lowest of the heads reflexed; capsule narrowly lanceolate.
Heads 7–10 mm. in diameter; leaf-blades erect; petals usually longer than the sepals. 25. *J. nodosus.*
Heads 10–16 mm. in diameter; leaf-blades usually spreading; sepals longer than the petals. 26. *J. Torreyi.*
Inflorescence with elongated branches; flowers erect-ascending; capsule oblong.
Capsule shorter than or rarely equalling the acuminate sepals and petals.
Flowers dark brown.
Capsule acute. 27. *J. nevadensis.*
Capsule truncate or obtuse.
Heads several; leaves terete; seeds not caudate. 28. *J. truncatus.*
Heads solitary, or rarely 2–3; leaves somewhat flattened; seeds often caudate. 29. *J. Mertensianus.*
Flowers light brown or straw-colored. 36. *J. columbianus.*
Capsule longer than the obtuse or acutish petals and sepals. 31. *J. Richardsonianus.*
Stamens 3; seeds long-caudate; perennials with cespitose rootstocks. 32. *J. Tweedyi.*

IX. Ensifolii.

Styles long, exceeding the petals by 1 mm. in length. 33. *J. Tracyi.*
Style slightly, if at all exceeding the petals.
Flower-clusters numerous, small, 5–12-flowered, light colored. 34. *J. brunnescens.*
Flower-clusters few, 15–25-flowered.
Flowers greenish or light brown; stamens 6; ligules of the sheaths usually without auricles. 35. *J. parous.*
Flowers fuscous or very dark brown.
Stamens 6; ligules of the sheaths usually produced into small auricles. 36. *J. saximontanus.*
Stamens 3; ligules without auricles. 37. *J. ensifolius.*

2. JUNCOÏDES (Dill.) Adans. Wood-rush.

Flowers on slender pedicels in a corymbiform inflorescence.
Petals and sepals 1.5–2 mm. long.
Flowers and capsule pale green; leaves thin, shining; seeds brown, ellipsoid. 1. *J. parviflorum.*
Flowers and capsule dark brown; leaves thick, dull; seeds yellow, constricted at each end. 2. *J. Piperi.*
Petals and sepals 3–3.5 mm. long. 3. *J. glabratum.*
Flowers subsessile in head-like or spike-like clusters.
Blades at least of the lower leaves flat, not attenuate into a subulate tip.
Spikelets peduncled, forming a corymb.
Flowers light yellow. 4. *J. comosum.*
Flowers brown or ferruginous. 5. *J. intermedium.*
Spikelets subsessile, forming a compound spike.
Plant tall, 4–5 dm. high; inflorescence subcapitate; stem-leaves broad and flat; bractlets not ciliate. 6. *J. subcapitatum.*
Plant 1–2, dm. rarely 4 dm. high.
Bractlets ciliate; spike usually elongate and often nodding; stem-leaves narrow, attenuate. 7. *J. spicatum.*
Bractlets lacerate, not ciliate; spike short, capitate. 8. *J. arcticum.*
Blades of the leaves attenuate into subulate, almost pungent tips.
Spikelets many-flowered; the lower on suberect or ascending peduncles; leaves erect. 9. *J. hyperboreum.*
Spikelets few-flowered on arcuate-spreading peduncles; leaves arcuate-spreading. 10. *J. arcuatum.*

Family 20. ALLIACEAE. Onion Family.

Perianth-segments distinct or nearly so; style articulate to the 3-lobed capsule; bracts broad, spathaceous. 1. Allium.

Perianth-segments united into a tube, with adnate filaments; style not articulate to the capsule; bracts not spathaceous, distinct.
Filaments not united into a tube; pedicels articulate; capsule ovate or oblong.
Filaments apparently in one series.
Filaments opposite to the petals wing-appendaged at the base; anthers basifixed; flowers subcapitate. 2. DIPTEROSTEMON.
Filaments all deltoid; anthers versatile; flowers umbellate. 3. HESPEROSCORDION.
Filaments in two series; the inner adnate to the free part of the petals; anthers versatile. 4. TRITILEIA.
Filaments united into a tube; pedicels not articulate; capsule triquetrous, subglobose. 5. ANDROSTEPHIUM.

1. ÁLLIUM (Tourn.) L. ONION, GARLIC, LEEK, CHIVES.

Bulb crowning a persistent rootstock; outer coat more or less fibrous.
Leaves terete and hollow; umbels dense, subcapitate. 1. *A. sibiricum.*
Leaves flat or channeled, not hollow.
Umbels rarely nodding; petals and sepals long-acuminate; capsule not crested.
Stamens and styles exserted. 2. *A. validum.*
Stamens and styles included, half as long as the petals. 3. *A. brevistylum.*
Umbels nodding; petals and sepals obtuse or acute; capsule 6-crested; stamens and style exserted.
Leaves rounded-convex on the back, not keeled, lunate in cross-section. 4. *A. recurvatum.*
Leaves almost flat or keeled, somewhat broadly V-shaped in cross-section.
Umbels many-flowered; leaves 3–5 mm. wide. 5. *A. cernuum.*
Umbels few-flowered; leaves less than 3 mm. wide. 6. *A. neo-mexicanum.*
Bulbs without a rootstock.
Outer bulb-coat fibrous.
Umbels bulblet-bearing; flowers few or sometimes none.
Capsule with 6 rounded crests. 7. *A. fibrosum.*
Capsule not crested.
Petals and sepals ovate. 8. *A. rubrum.*
Petals and sepals oblong-lanceolate. 9. *A. canadense.*
Umbels not bulblet-bearing.
Capsule not crested; involucre usually 3-leaved.
Petals and sepals with a thick rounded keel. 10. *A. aridum.*
Petals and sepals not thickened on the back. 11. *A. Nuttallii.*
Capsule crested.
Petals and sepals more than 1 cm. long; peduncles often 2 or 3; sheaths loose; bracts 3. 12. *A. macropetalum.*
Petals and sepals less than 1 cm. long; peduncles solitary; sheaths close.
Bracts broadly ovate, usually 2, in flowers not reflexed; flowers white or light rose; several layers of the bulb-coat fibrous.
Plant 1–3 dm. high; pedicels 8–12 mm. long; petals and sepals about 5 mm. long. 13. *A. textile.*
Plant 2–6 dm. high; pedicels 12–25 mm. long; petals and sepals 6–8 mm. long. 14. *A. Geyeri.*
Bracts lanceolate, usually 3, soon reflexed; only outer bulb-coat fibrous; flowers red-purple. 15. *A. Pikeanum.*
Outer bulb-coat not fibrous, but often more or less reticulate.
Petals more or less serrulate or denticulate on the margins.
Petals and sepals acuminate, the former serrulate near the apex.
Petals and sepals long-acuminate, one-half longer than the stamens. 16. *A. acuminatum.*
Petals and sepals abruptly acuminate, only slightly longer than the stamens. 17. *A. cuspidatum.*
Petals and sepals obtuse, delicately denticulate below with spreading papillae. 18. *A. simillimum.*
Petals entire, neither serrulate nor denticulate.
Ovary and capsule crestless or indistinctly 3-crested.
Petals and sepals obtuse or barely acutish.
Leaves much longer than the scape. 18. *A. simillimum.*
Leaves shorter than the scape. 19. *A. scillioides.*
Petals and sepals acute or acuminate.
Stamens exserted. 20. *A. incisum.*
Stamens included.
Reticulations of the bulb-coat irregular, narrow, with curved sides; the outer coat in age becoming fimbrillate. 20. *A. fibrillum.*
Reticulations of the bulb-coat trapezoid, or elongated pent- or hexagonal; the sides not strongly curved; no fimbrillae.
Sepals and petals neither gibbous at the base, nor keeled on the back.
Involucres 3-leaved; petals and sepals little exceeding the stamens. 22. *A. tribracteatum.*
Involucres 2-leaved; petals and sepals at least half longer than the stamens.
Petals and sepals half longer than the stamens; pedicels 8–15 mm. long. 23. *A. Diehlii.*
Petals and sepals twice as long as the stamens; pedicels about 4 mm. long. 24. *A. minimum.*
Sepals and petals gibbous at the base and more or less keeled on the back below.

Scape flattened; leaf-blades 5–8 mm. wide.
Scape much exceeding the leaves in length; stamens about equalling the petals and sepals.
25. *A. Douglassii.*
Scape low, often exceeded by the leaves; stamens much shorter than the petals and sepals.
Stamens two-thirds as long as the sepals; capsule scarcely crested. 26. *A. Tolmiei.*
Stamens half as long as the sepals; capsules with 3 small crests. 27. *A. Cusickii.*
Scape not flattened; leaf-blades 2–4 mm. wide.
Petals about twice as long as the stamens; capsule not crested. 28. *A. Brandegei.*
Petals barely exceeding the stamens; capsule with minute thick crests. 29. *A. Nivii.*
Ovary and capsule distinctly 6-crested.
Stamens and styles exserted; petals and sepals acute or obtuse.
30. *A. stellatum.*
Stamens and styles not exserted; petals and sepals acuminate.
Leaves more than one.
Reticulations of the bulb-coats sinuate; leaves shorter than the scape.
Bulb-coat thin, faintly reticulate; leaves 4–10 mm. wide.
31. *A. bisceptum.*
Bulb-coat thick, strongly reticulate; leaves 1–3 mm. wide.
32. *A. Palmeri.*
Reticulations of the bulb-coats straight; leaves longer than the scapes. 33. *A. pleianthum.*
Leaves solitary, longer than the scape.
Petals and sepals long-acuminate, nearly twice as long as the stamens. 34. *A. cristatum.*
Petals and sepals acute or short-acuminate, slightly longer than the stamens. 35. *A. nevadense.*

2. DIPTEROSTÈMON Rydb.

Perianth-tube funnelform, gradually widening into the limb; bracts broad, conspicuously exceeding the pedicels. 1. *D. capitatus.*
Perianth-tube cylindro-campanulate, abruptly widening into the limb: bracts narrow, often exceeded by some of the unequal pedicels. 2. *D. pauciflorus.*

3. HESPEROSCÒRDUM Lindl. 1. *H. lacteum.*

4. TRITELÈIA Dougl. Wild Hyacinth. 1. *T. grandiflora.*

5. ANDROSTÉPHIUM Torr. 1. *A. breviflorum.*

Family 21. LILIACEAE. Lily Family.

Plant with a short rootstock; flowers subumbellate on subterranean pedicels from the crown of the rootstock; petals and sepals united into a long tube. 1. Leucocrinum.
Plant with bulbs or corms, either leafy-stemmed or scapiferous; petals and sepals distinct or nearly so.
Bulb scaly; plant tall, leafy.
Anthers versatile; petals and sepals oblanceolate, clawed, with a linear nectariferous groove. 2. Lilium.
Anthers fixed near the base, slightly if at all versatile; petals and sepals obovate-oblanceolate, not clawed; nectary a shallow pit.
Styles distinct from the middle; flowers purple, mottled with yellowish green; fruit winged. 3. Fritillaria.
Styles connate to the summit; flowers yellow or orange; fruit not winged.
4. Ochrocodon.
Bulb tunicated.
Anthers strictly basifixed.
Leaves 2, basal or nearly so; flowers nodding. 5. Erythronium.
Leaves several, alternate; flowers not nodding.
Flowers in ours usually solitary; pedicels not jointed; dwarf alpine plant.
6. Lloydia.
Flowers racemose; pedicels jointed below the middle; not alpine.
7. Eremocrinum.
Anthers versatile; scapose plants with racemose flowers. 8. Quamasia.

1. LEUCOCRÌNUM Nutt. Star of Bethlehem, Mountain Lily, Wild Tuberose. 1. *L. montanum.*

2. LÍLIUM (Tourn.) L. Lily.

Flower erect, solitary or subumbellate; petals and sepals unguiculate.
Leaves linear. 1. *L. umbellatum.*
Leaves lanceolate. 2. *L. montanum.*
Flowers several, racemose, nodding; petals and sepals not unguiculate.
3. *L. columbianum.*

3. FRITILLÀRIA L. Tiger Lily, Leopard Lily.

Leaves lanceolate or linear-lanceolate. 1. *F. lanceolata.*
Leaves narrowly linear. 2. *F. atropurpurea.*

4. OCHROCÒDON Rydb. Yellow Bell. 1. *O. pudicus.*

5. ERYTHRÒNIUM L. Dog-tooth Violet, Adder-tongue, Star-strikers.

Style more or less clavate.
Anthers of the stamens subequal.
Anthers 3–4 mm. long; rarely longer, light yellow. 1. *E. parviflorum.*
Anthers 4–8 mm. long, usually purplish, in age yellowish.
Petals 2–3 cm. long; their veins almost equal and equally distributed. 2. *E. obtusatum.*
Petals 3–5 cm. long (in secondary flowers sometimes smaller); midvein prominent, separated from the next veins by rather broad veinless spaces, side veins branched and arching towards the margin. 3. *E. grandiflorum.*
Anthers of the inner set of stamens much longer than those of the outer; veining of petals resembling that of *E. grandiflorum.* 4. *E. utahense.*
Style filiform or nearly so; petals narrowly linear-lanceolate. 5. *E. leptopetalum.*

6. LLÒYDIA Salisb. Alp Lily. 1. *L. serotina.*

7. EREMOCRÌNUM M. E. Jones. Desert Lily. 1. *E. albomarginatum.*

8. QUAMÁSIA Raf. Camash, Blue Camas, Wild Hyacinth, Swamp Sego.

Flowers somewhat oblique, about 2 cm. long; divisions 3-veined, or some of them 4- or 5-veined. 1. *Q. Quamash.*
Flowers regular, about 3 cm. long; divisions all 5–7-veined. 2. *Q. Suksdorfii.*

Family 22. CONVALLARIACEAE. Lily-of-the-Valley Family.

Stem leafy; leaves alternate.
Sepals and petals distinct.
Flowers white, in terminal racemes or panicles; anthers introrse; stem simple.
Petals and sepals 3; stamens 6. 1. Vagnera.
Petals and sepals 2; stamens 4. 2. Unifolium.
Flowers extra-axillary or terminal and solitary or in small umbelliform clusters; anthers extrorse or opening laterally; stem branched.
Flowers extra-axillary, greenish white; filaments slender; anthers acute.
Corolla campanulate. 3. Streptopus.
Corolla rotate. 4. Kruhsea.
Flowers terminal, yellow; filaments dilated; anthers obtuse. 5. Disporum.
Sepals and petals partially united into a tube; flowers axillary. 6. Polygonatum.
Stem scapiform; leaves basal; flowers in terminal umbels, or solitary and terminal. 7. Clintonia.

1. VÁGNERA Adans. Wild Spikenard, Wild Lily-of-the-Valley, False Solomon's Seal.

Inflorescence paniculate.
Petals and sepals scarcely half as long as the stamens; fruit dark purple. 1. *V. brachypetala.*
Petals and sepals almost equalling the stamens; fruit red with purple spots.
Leaf-blades acuminate, the lower contracted at the base into distinct petioles; style about 0.5 mm. long. 2. *V. racemosa.*
Leaf-blades acute, all sessile and more or less clasping; style fully 1 mm. long. 3. *V. amplexicaulis.*

Inflorescence racemose.
Leaves 6–12, sessile.
Petals and sepals linear or linear-lanceolate. 4. *V. leptopetala.*
Petals oblong-lanceolate.
Pedicels short, slightly if at all longer than the flowers or the fruit; leaves lanceolate, acute. 5. *V. stellata.*
Pedicels long, the lower often 2–3 times as long as the flowers or the fruit.
Raceme strict; pedicels strongly ascending; leaves narrowly lanceolate, long-attenuate. 6. *V. liliacea.*
Raceme zigzag; pedicels spreading; leaves broadly lanceolate, usually abruptly acuminate. 7. *V. sessilifolia.*
Leaves 2–4, sheathing the low stem. 8. *V. trifolia.*

2. UNIFÒLIUM Adans. Two-leaved Solomon's Seal.

Leaves subsessile; blades cordate-clasping, with shallow and narrow sinuses. 1. *U. canadense.*
Stem-leaves distinctly petioled; blades with deep and open sinuses. 2. *U. dilatatum.*

3. STRÉPTOPUS Michx. Twisted-stalk.

Plant branched; pedicels geniculate; berry white. 1. *S. amplexifolius.*
Plant simple; pedicels not geniculate; berry red. 2. *S. curvipes.*

4. KRÙHSEA Regel. — 1. *K. streptopoides.*

5. DÍSPORUM Salisb.

Stigma 3-cleft; fruit deeply lobed, obtuse, papillose. — 1. *D. trachycarpum.*
Stigma entire; fruit acutish, not papillose, but often pubescent. — 2. *D. oreganum.*

6. POLYGONÀTUM (Tourn.) Hill. Solomon's Seal. — 1. *P. commutatum.*

7. CLINTÒNIA Raf. — 1. *C. uniflora.*

Family 23. **DRACAENACEAE.** Yucca Family.

Flowers perfect, large; ovary many-ovuled and fruit many-seeded.
  Styles evident; petals and sepals thin, petaloid, spreading in anthesis. — 1. Yucca.
  Styles wanting; petals and sepals thick, inflexed. — 2. Clistoyucca.
Flowers polygamo-dioecious; ovules 2 in each cell, but capsule often 1-seeded. — 3. Nolina.

1. YÚCCA (Rupp.) L. Yucca, Spanish Bayonet, Soap-weed, Soap-root, Grass Cactus.

Fruit a dry capsule.
  Leaves narrowly linear, very long.
    Style stout, swollen, green. — 1. *Y. glauca.*
    Style not swollen, white. — 2. *Y. angustissima.*
  Leaves linear-lanceolate, short; style not swollen, white.
    Leaves not papillose. — 3. *Y. Harrimaniae.*
    Leaves densely rough-papillose at least on the back. — 4. *Y. Gilbertiana.*
Fruit fleshy. — 5. *Y. baccata.*

2. CLISTOYÚCCA (Engelm.) Trelease. Joshua Tree. — 1. *C. brevifolia.*

3. NOLÌNA Michx. — 1. *N. Greenei.*

Family 24. **CALOCHORTACEAE.** Mariposa Lily Family.

1. CALOCHÓRTUS Pursh. Sego Lily, Mariposa Lily, Butterfly Lily.

Capsule winged.
  Petals 1.5–2.5 cm. long, strongly arched and broadly pitted; leaves single; scape 1–4-flowered; bracts lanceolate.
    Stem 1–2 dm. high; gland broad. — 1. *C. elegans.*
    Stem 3–4 dm. high; gland very small. — 2. *C. apiculatus.*
  Petals 2.5–4 cm. long, less arched, not pitted; leaves usually 2; bracts linear.
    Purple spot of the petals lune-shaped, broader than long. — 3. *C. pavonaceus.*
    Purple spot of the petals almost orbicular. — 4. *C. eurycarpus.*
Capsule not winged.
  Flowers white or lilac.
    Petals abruptly acuminate; gland oblong.
      Petals lilac, purplish, or light blue, with greenish midvein. — 5. *C. macrocarpus.*
      Petals cream-colored, tinged with purple and sometimes with a purplish spot. — 6. *C. acuminatus.*
    Petals rounded or merely acute at the apex.
      Anthers acute; gland broader than long. — 7. *C. Gunnisonii.*
      Anthers obtuse; gland not broader than long.
        Stem erect, bulbiferous near the base. — 8. *C. Nuttallii.*
        Stem flexuose, not bulbiferous. — 9. *C. flexuosus.*
  Flowers yellow. — 10. *C. aureus.*

Family 25. **TRILLIACEAE.** Trillium Family.

1. TRÍLLIUM L. Wake-robin, Birth-root.

Flowers sessile; leaves long-petioled; blades rounded. — 1. *T. petiolatum.*
Flowers peduncled; leaves subsessile, rhombic. — 2. *T. ovatum.*

Family 26. **SMILACACEAE.** Smilax Family.

1. NEMÉXIA Raf. Carrion Flower, Smilax. — 1. *N. lasioneuron.*

Family 27. **AMARYLLIDACEAE.** Amaryllis Family.

Perennial herbs, with fleshy leaves (often spiny-toothed), clustered on the caudex; anthers versatile; flowers in scikes or panicles. — 1. Agave.

Perennial herbs, with grass-like leaves, from a subterranean corm or short rootstock; anthers erect; flowers in ours umbellate. 2. HYPOXIS.

1. AGÀVE L. AMERICAN ALOE, CENTURY PLANT. 1. *A. utahensis.*

2. HYPÓXIS L. STAR-GRASS. 1. *H. hirsuta.*

Family 28. IRIDACEAE. IRIS FAMILY.

Styles alternate with the stamens; filaments more or less united; flowers rather small; sepals and petals similar.
Filaments united to near the top; flowers blue or white, rarely rose-purple. 1. SISYRINCHIUM.
Filaments united only at the base; flowers rose or purple. 2. OLSYNIUM.
Styles opposite to and arching over the stamens, petal-like; filaments distinct; flowers large; sepals and petals unlike. 3. IRIS.

1. SISYRÍNCHIUM L. BLUE-EYED GRASS.

Stems bearing several peduncles from leaf-bearing nodes. 1. *S. radicatum.*
Stems simple and leafless, with sessile terminal spathe (casually with a terminal leaf-bearing node and a peduncle).
Outer bract of spathe little or not at all longer than the inner one, rarely surpassing it by more than one-third its length.
Small and slender; flowers 10 mm. or less long; capsules less than 3 mm. high. 2. *S. halophilum.*
Stouter; flowers 12 mm. or more long; capsules 4 mm. or more high.
Outer bract 2–3 cm. long; flowers becoming 14 mm. long. 3. *S. occidentale.*
Outer bract 3–6 cm. long; flowers becoming 18 mm. long. 4. *S. idahoense.*
Outer bract of spathe conspicuously prolonged, sometimes 2–3 times longer than the inner one.
Plant developing capsules among the bases of the leaves different in form from those of the terminal spathes. 5. *S. heterocarpum.*
No basal capsules.
Stem winged or margined.
Perianth-segments not emarginate, narrowed to the aristulate tip.
Stems and leaves mostly 1–2 mm. wide; capsule obovoid-oblong, 6–7 mm. long. 6. *S. alpestre.*
Stems and leaves mostly under 1 mm. wide; capsule obovoid or subglobose, 3–5 mm. long. 7. *S. septentrionale.*
Perianth-segments more or less retuse or abruptly contracted to the aristulate apex.
Stems and leaves mostly 1.5–2.5 mm. wide; capsules 4–6 mm. high. 8. *S. angustifolium.*
Stems and leaves mostly 1.5 mm. or less in width; capsules 2–4 mm. high.
Bracts of spathe smooth; valves of capsule veinless. 9. *S. mucronatum.*
Bracts of spathe minutely scabrellous; valves of capsule sparsely venose. 10. *S. campestre.*
Stem practically marginless. 11. *S. inalatum.*

2. OLSŸNIUM Raf. 1. *O. grandiflorum.*

2. ÌRIS L. BLUE FLAG, FLEUR-DE-LIS. 1. *I. missouriensis.*

Family 29. ORCHIDACEAE. ORCHIS FAMILY.

Fertile stamens 2; lip a large inflated sack.
Sepals distinct; lip with an almost conical obtuse prolongation below. 1. CRIOSANTHES.
Lower sepals united; lip rounded-saccate. 2. CYPRIPEDIUM.
Fertile stamen 1.
Pollinia caudate at the base, attached to a viscid disk or gland.
Glands enclosed in a pouch-like fold; lip 3-lobed. 3. ORCHIS.
Glands not enclosed in a pouch.
Gland surrounded by a thin membrane; lip toothed at the apex. 4. COELOGLOSSUM.
Gland naked; lip entire.
Sepals 3–5-nerved; plants with rootstock or fibro-fleshy roots.
Stem scapiform; leaves 1–2, basal; anther-sacks divergent; plants in ours with rootstocks.
Basal leaves 2; ovary straight. 5. LYSIAS.
Basal leaf 1; ovary arcuate. 6. LYSIELLA.
Stem leafy; anther-cells parallel or nearly so; plants with fleshy-fibrous roots. 7. LIMNORCHIS.
Sepals 1-nerved; plants with rounded or oblong, undivided biennial corms. 8. PIPERIA.

Pollinia not produced into caudicles.
Pollinia granulose or powdery.
Anthers operculate; leaves alternate.
Green plants, with large leaves. 9. SERAPIAS.
Plant white, turning brownish; leaves reduced, scale-like. 10. EBUROPHYTON.
Anthers not operculate.
Leaves green, borne on the stem.
Leaves alternate; spike mostly twisted. 11. IBIDIUM.
Leaves 2, opposite; spike not twisted. 12. OPHRYS.
Leaves usually white-reticulate, basal. 13. PERAMIUM.
Pollinia smooth or waxy.
Plants with corms or solid bulbs, rarely with coralloid roots; leaves not scale-like.
Leaves unfolding before or with the flowers.
Lip flat; flowers racemed.
Leaves cauline; column short; pollinia clavate. 14. MALAXIS.
Leaves basal; column elongated; pollinia globose. 15. LIPARIS.
Lip saccate; flower solitary. 16. CYTHEREA.
Leaf 1, unfolding after the flowering time. 17. APLECTRUM.
Plants with coralloid roots, bulbless; leaves reduced to scales. 18. CORALLORRHIZA.

1. CRIOSÁNTHES Raf. RAM'S-HEAD, RAM'S-HEAD LADIES' SLIPPER.

1. *C. arietinum.*

2. CYPRIPÈDIUM L. LADIES' SLIPPER.

Leaves alternate; flowers solitary, terminal, or also several singly in the axils of the upper leaves.
Sepals obovate to broadly obovate or oval, not longer than the lip; sterile stamen elliptic-cordate. 1. *C. passerinum.*
Sepals lanceolate, attenuate, often longer than the lip.
Lip white, purple-veined; sterile stamen ovate or obovate. 2. *C. montanum.*
Lip yellow; sterile stamen triangular, yellow and purple-spotted.
Lip 2–2.5 cm. long, broader than deep; lower sepal narrower than the upper one, exceeding the lip. 3. *C. parviflorum.*
Lip 3–4 cm. long, deeper than broad; lower sepal fully as broad as the upper one or broader, usually shorter than the lip. 4. *C. veganum.*
Leaves 2, opposite or nearly so; flowers usually several in a contracted bracted spike. 5. *C. Knightae.*

3. ÓRCHIS (Tourn.) L. ORCHIS. 1. *O. rotundifolia.*

4. COELOGLÓSSUM Hartman. 1. *C. bracteatum.*

5. LÝSIAS Salisb.

Leaves orbiculat or rounded oval; spur slightly clavate at the apex. 1. *L. orbiculata.*
Leaves oval or ovate; spur strongly clavate and curved at the apex. 2. *L. Menziesii.*

6. LYSIÉLLA Rydb. 1. *L. obtusata.*

7. LIMNÓRCHIS Rydb. BOG ORCHID.

Lip more or less lanceolate, *i. e.*, broad near the base.
Flowers greenish or purplish; lip not rhombic at the base.
Spur decidedly clavate, thickened and obtuse at the apex, shorter than the lip.
Petals purplish; spur only one-half to two-thirds the length of the lip, very saccate.
Lip linear or nearly so, 5–7 mm. long; ovary slightly curved; spike usually elongated. 1. *L. stricta.*
Lip lanceolate, fleshy, 4–5 mm. long; ovary strongly curved; spike usually short. 2. *L. purpurascens.*
Petals greenish; spur almost equalling the lip. 3. *L. viridiflora.*
Spur slender, scarcely thickened at all towards the apex, often acutish, equalling or slightly exceeding the lip; plant tall and stout; flowers comparatively large; sepals 4–6 mm. long. 4. *L. media.*
Flowers white or nearly so; lip lanceolate, decidedly dilated, subrhombic at the base.
Spur only slightly if at all exceeding the lip.
Spur usually shorter than the lip and clavate. 5. *L. borealis.*
Spur equalling or slightly exceeding the lip, slightly or not at all clavate. 6. *L. dilatata.*
Spur from one-fourth to two-thirds longer than the lip. 7. *L. leucostachys.*
Lip linear, *i. e.*, not at all dilated at the base.
Spur shorter than the lip, decidedly saccate. 1. *L. stricta.*
Spur much exceeding the lip, filiform.
Spike comparatively dense. 8. *L. ensifolia.*
Spike very lax. 9. *L. laxiflora.*

8. PIPÉRIA Rydb. Wood Orchid.

Spur slightly exceeding the lip. 1. *P. unalaschensis.*
Spur 2–3 times as long as the lip, filiform.
Lip linear to lanceolate, about 6 mm. long; spike dense; spur 15–18 mm. long. 2. *P. multiflora.*
Lip ovate or ovate-lanceolate; spike looser; spur 10–12 mm. long. 3. *P. elegans.*

9. SERÁPIAS L. Helleborine. 1. *S. gigantea.*

10. EBURÓPHYTON Heller. 1. *E. Austinae.*

11. IBÍDIUM Salisb. Ladies' Tresses.

Callosities at the base of the lip obsolete; lower sepals coherent with the petals and upper sepals. 1. *G. strictum.*
Callosities nipple-shaped, directed downwards; lower sepals free. 2. *G. porrifolium.*

12. ÒPHRYS (Tourn.) L. Tway-blade, Twifole.

Lip broad, slightly 2-cleft at the apex, with or without a mucro in the sinus.
Lip with distinct rounded auricles, slightly cleft at the apex; no mucro. 1. *O. borealis.*
Lip with no auricles, but in their place two divergent small teeth at the base; mucro present.
Lip unguiculate; lateral teeth small, without a papilla at the base. 2. *O. convallarioides.*
Lip not unguiculate; lateral teeth prominent, with a papilla at the base. 3. *O. caurina.*
Lip narrow, 2-cleft for about half its length into linear-lanceolate lobes, without a mucro, with narrow teeth at the base. 4. *O. nephrophylla.*

13. PERÀMIUM Salisb. Rattlesnake Plantain.

Lip evidently saccate, with recurved margins. 1. *P. ophioides.*
Lip scarcely saccate, with incurved margins. 2. *P. decipiens.*

14. MALÁXIS Soland. Adder's Mouth.

Lip ovate, acuminate. 1. *M. monophylla.*
Lip broadly obcordate, with a tooth in the sinus 2. *M. unifolia.*

15. LÍPARIS L. C. Rich. Twayblade. 1. *L. Loeselii.*

16. CYTHERÈA Salisb. Calypso, Venus' Slipper.

Beard of the lip yellow. 1. *C. bulbosa.*
Beard of the lip white. 2. *C. occidentalis.*

17. APLÉCTRUM Nutt. Adam and Eve, Putty-root. 1. *A. spicatum.*

18. CORALLORRHÌZA R. Br. Coral-root.

Spur small, adnate to the ovary.
Lip entire, ovate, sinuate; whole plant yellow. 1. *C. ochroleuca.*
Lip with 2 lobes or teeth below the middle; plant brownish, rarely yellowish.
Column about half as long as the petals; sepals erect.
Lip unspotted; teeth or lobes small; spur very small. 2. *C. Corallorrhiza.*
Lip spotted; lobes prominent; spur manifest. 3. *C. multiflora.*
Column almost equalling the petals; sepals reflexed. 4. *C. Mertensiana.*
Spur lacking.
Petals and sepals 12–14 mm. long, elliptic. 5. *C. striata.*
Petals and sepals 7–8 mm. long, oblong. 6. *C. Vreelandii.*

Subclass 2. **DICOTYLEDONES.**

Family 30. **SALICACEAE.** Willow Family.

Bractlets incised; flowers with a cup-shaped disk; stamens usually more than 10; stigmas expanded; winter-buds with several scales 1. Populus.
Bractlets entire or denticulate; flowers with one or more glands; stamens 2–7, in most species only 2; stigmas narrow; winter-buds with but 1 scale each. 2. Salix.

1. **PÓPULUS** (Tourn.) L. Poplar, Cottonwood, Aspen.

Leaves not white-tomentose beneath, toothed or rarely entire.
Petioles strongly flattened laterally.
Leaves suborbicular, acute or very short-acuminate, finely crenate or subentire.
Leaf-blades with 2 conspicuous glands beneath at the base. 1. *P. cercidiphylla.*
Leaf-blades not glandular at the base. 2. *P. tremuloides.*
Leaves broadly deltoid, cordate, or ovate, abruptly acuminate, coarsely toothed, especially about the middle.
Cup of the pistillate flowers 6–8 mm. broad.
Pedicels equalling or exceeding the capsules; leaf-blades longer than broad; teeth few, less than 10 on each side. 3. *P. Wislizeni.*
Pedicels shorter than the capsules; leaf-blades usually broader than long; teeth more than 10 on each side, sometimes obscure. 4. *P. Fremontii.*
Cup of the pistillate flowers less than 5 mm. broad; teeth of the leaves many, more than 10 on each side; pedicels shorter than the capsule.
Leaves flabellate-cordate, with a broad, concave, entire sinus. 5. *P. Sargentii.*
Leaf-blades ovate, rounded or cuneate at the base, which is more or less toothed; only the blades of the young shoots cordate. 6. *P. Besseyana.*
Petioles terete or nearly so.
Petioles at least half as long as the blades; blades cordate, ovate, or broadly lanceolate.
Leaves green on both sides, abruptly long-acuminate. 7. *P. acuminata.*
Leaves paler beneath, acute or somewhat acuminate.
Fruit sessile, usually 3-carpellary.
Ovary and capsule densely pubescent, subglobose. 8. *P. trichocarpa.*
Ovary and fruit glabrous, but slightly warty, ovoid. 9. *P. hastata.*
Fruit pedicelled, 2-carpellary, glabrous; capsule ovoid.
Twigs, petioles, and veins glabrous. 10. *P. balsamifera.*
Twigs, petioles, and veins of the lower surface of the leaves more or less pubescent. 11. *P. candicans.*
Petioles about one-third as long as the blade or less.
Leaves cordate at the base. 12. *P. Tweedyi.*
Leaf-blades lanceolate, usually acute at the base. 13. *P. angustifolia.*
Leaves white-tomentose beneath, often lobed. 14. *P. alba.*

2. **SÀLIX** (Tourn.) L. Willow.

Capsule glabrous, or slightly silky when young in nos. 12, 14, and 16.
Filaments hairy, at least below; bractlets caducous, light yellow; style very short, obsolete, or none, evident only in nos. 16 and 18; aments in all ours on short leafy branches.
Stamens 3–7; stipe slender, 2–5 times as long as the nectaries.
Petioles without glands; leaves remotely serrulate, thin. I. Amygdalinae.
Petioles with glands; leaves densely glandular-serrate, firmer. II. Pentandrae.
Stamens 2; stipes usually very short.
Leaf-blades lanceolate, acuminate. III. Albae.
Leaf-blades linear or linear-lanceolate, acute, rarely acuminate. IV. Longifoliae.
Filaments glabrous; bractlets persistent, rarely light yellow.
Trees, or erect or ascending shrubs, several dm. high; leaf-blades more than 1 cm. long; style evident. V. Cordatae.
Depressed prostrate shrubs, 1–3 cm. high; leaf-blades less than 1 cm. long; style none. VI. Retusae.
Capsule hairy.
Filaments hairy; bractlets caducous; leaf-blades linear to lanceolate, not very veiny. IV. Longifoliae.
Filaments glabrous, or if somewhat hairy, leaf-blades oval or orbicular, very veiny; bractlets persistent.
Capsule rostrate, distinctly stipitate; style none or short, always shorter than the stipe.
Stipe equalling or exceeding the bractlets; style 0.5 mm. long or less. VII. Rostratae.
Stipe shorter than the bractlets; style usually 1 mm. long. VIII. Capreae.

Capsule scarcely rostrate, subsessile or, if stipitate, stipe shorter than the style.
Style evident, at least 0.5 mm. long.
Leaves permanently silky or tomentose beneath. IX. ARGENTEAE.
Leaves neither silky-white nor tomentose beneath. X. ARCTICAE.
Style none; depressed or low shrubs, with entire strongly reticulate leaves. XI. RETICULATAE.

I. AMYGDALINAE.

Bractlets entire.
Leaves narrowly lanceolate; petioles short.
Bark of twigs brownish; aments long and lax; leaf-blades broadest below the middle, long-acuminate. 1. *S. nigra.*
Bark of twigs light yellow; aments short and dense; leaf-blades usually broadest at or above the middle, short-acuminate. 2. *S. Wrightii.*
Leaf-blades broadly lanceolate; petioles slender, 6–15 mm. long. 3. *S. amygdaloides.*
Bractlets denticulate. 4. *S. laevigata.*

II. PENTANDRAE.

Leaves narrowly oblanceolate, acute, drying blackish; bractlets of the staminate aments ovate, and of pistillate lanceolate, neither toothed. 5. *S. erythrocoma.*
Leaves lanceolate to ovate; bractlets of the staminate aments obovate or spatulate, usually toothed; those of the pistillate aments oblong.
Bractlets densely white-villous; stipe of the capsules scarcely twice as long as the nectaries. 6. *S. serissima.*
Bractlets sparingly hairy; stipe of the capsules 3–4 times as long as the nectaries.
Leaves ovate-lanceolate or ovate; glands of the leaves very prominent; those on the petioles often stalked. 7. *S. lucida.*
Leaves lanceolate; glands of the leaf-blades not very prominent; those on the petioles always sessile.
Leaf-blades usually less than 1 dm. long, green on both sides; aments short. 8. *S. Fendleriana.*
Mature leaf-blades often 1 dm. long, glaucous beneath; aments elongate. 9. *S. Lyallii.*

III. ALBAE.

One species. 10. *S. alba.*

IV. LONGIFOLIAE.

Capsule glabrous or slightly silky when young.
Leaves with close serrations, glaucous and prominently veined beneath. 11. *S. melanopsis.*
Leaves entire or with distant serrations, neither glaucous nor strongly veined beneath.
Styles none.
Leaves permanently silky.
Leaves 3–5 mm. wide; ovary without a hairy swelling at the apex. 12. *S. exigua.*
Leaves 2–3 mm. wide; ovary with a hairy swelling at the apex. 13. *S. stenophylla.*
Leaves glabrous in age, or nearly so.
Leaves linear-lanceolate; bractlets ovate or obovate, obtuse. 14. *S. interior.*
Leaves narrowly linear; bractlets lanceolate, acute. 15. *S. linearifolia.*
Styles evident; aments dense; bractlets densely silky. 16. *S. sessilifolia.*
Capsule permanently densely pubescent.
Stigma sessile; leaves entire or nearly so. 17. *S. argophylla.*
Stigma on a distinct style, which is 0.5 mm. long; leaves dentate. 18. *S. macrostachya.*

V. CORDATAE.

Leaves white-tomentose or white-villous beneath.
Leaves entire, or minutely denticulate; aments 3–4 cm. long; bractlets silky-pilose.
Leaves permanently appressed-silky. 19. *S. Sandbergii.*
Leaves in age glabrous and shining, at least above. 20. *S. lasiolepis.*
Leaves usually crenate, villous, 3–8 cm. long; aments 3–6 cm. long; bractlets densely villous. 21. *S. Hookeriana.*
Leaves glabrous or hairy, but not densely white-pubescent beneath.
Branches without a bloom.
Capsule long-stipitate; stipe in fruit 1.5–6 mm. long, equalling or exceeding the bractlets; style 0.5 mm. long or less.
Leaves dark green above; young branches not light yellow; aments on short leafy branches.
Mature leaves rather thin, dull; length of the blade less than three times its width. 22. *S. balsamifera.*
Mature leaves firm, dark green, shining above, pale beneath; length of the blade three times the width or more.
Stipe in fruit 2–4 times as long as the bractlets; mature leaves slightly serrate. 23. *S. Mackenziana.*
Stipe slightly if at all exceeding the bractlets.
Mature leaves lanceolate, strongly serrate. 24. *S. cordata.*
Mature leaves oblong or oblanceolate, entire. 25. *S. pedicillaris.*
Leaves yellowish green; young branches light yellow; aments naked or subtended by a few small leaves.

Leaves usually long-acuminate, serrate. 26. *S. lutea.*
Leaves acute or rarely short-acuminate, entire or indistinctly crenulate. 27. *S. Watsonii.*
Capsule short-stipitate or subsessile; stipe in fruit less than 1.5 mm. long and much shorter than the bractlets; style 0.5–1 mm. long.
Leaves more or less dentate, rarely subentire.
Young leaves and twigs rather densely pubescent with long white hairs; the former glandular-denticulate or dentate.
Bractlets fuscous. 28. *S. Barklayi.*
Bractlets yellowish or light brown. 29. *S. commutata.*
Young leaves glabrous or slightly pubescent.
Capsules 7–8 mm. long; leaf-blades broadly ovate or obovate, glandular-dentate. 30. *S. Tweedyi.*
Capsule 4–6 mm. long; leaf-blades narrowly obovate to lanceolate.
Leaves dark green above, not reticulate.
Leaves blackening in drying, finely glandular-dentate. 31. *S. conjuncta.*
Leaves not blackening in drying.
Leaves thin, ovate, elliptic, or obovate, light green and dull above; capsule ovoid. 32. *S. padophylla.*
Leaves thick, firm, shining above; capsule lance-ovoid.
Style 0.5–1 mm. long; aments on short leafy branches, 2–3 cm. long. 33. *S. monticola.*
Style 1–1.5 mm. long; aments subsessile, 3–4 cm long. 34. *S. curtiflora.*
Leaves yellowish green, conspicuously reticulate, thin.
Leaves acute or acuminate, serrate. 35. *S. pseudomyrsinites.*
Leaves obtuse or rounded at the apex, crenate. 36. *S. myrtillifolia.*
Leaves entire, linear, lanceolate, oblanceolate, or oblong; aments subsessile, naked.
Leaves permanently silky; a low shrub. 37. *S. Wolfii.*
Leaves glabrous in age; tree or tall shrub. 20. *S. lasiolepis.*
Branches with a bloom, purple. 38. *S. irrorata.*

VI. Retusae.

One species. 39. *S. Dodgeana.*

VII. Rostratae.

Leaves linear to lanceolate or oblanceolate.
Leaves sharply serrate, narrowly lanceolate, 5–10 cm. long. 40. *S. petiolaris.*
Leaves entire or nearly so, linear, less than 5 cm. long.
Leaves more or less silky, oblanceolate; branches purplish, usually with a bloom. 41. *S. Geyeriana.*
Leaves not silky, linear; branches without a bloom. 42. *S. gracilis.*
Leaves ovate to obovate or broadly oblanceolate.
Bracts fuscous, obovate or cuneate. 43. *S. discolor.*
Bracts yellow, linear-oblong or lanceolate.
Mature leaves thin, glabrous. 44. *S. perrostrata.*
Mature leaves firm, pubescent or tomentose beneath. 45. *S. Bebbiana.*

VIII. Capreae.

Capsule 8–10 mm. long; at least the staminate aments not leafy-bracted.
Leaves obovate, entire or nearly so, densely silky and fulvous, almost velutinous when young, in age glabrate above; bractlets fuscous, obovate. 46. *S. Scouleriana.*
Leaves oblanceolate, closely and finely serrulate, puberulent when young; bractlets yellow, oblong. 67. *S. MacCalliana.*
Capsule 6 mm. long or less; aments leafy-bracted.
Bractlets black, thinly pilose; style about 1 mm. long; leaves glabrate in age. 47. *S. Lemmoni.*
Bractlets brownish, villous; style about 0.5 mm. long; leaves silvery-silky beneath. 54. *S. argyrocarpa.*

IX. Argentea.

Aments more than 1 cm. broad; ovary over 5 mm. long.
Leaves obovate, ovate, or broadly oblanceolate.
Bractlets obovate, fuscous; leaves usually obovate.
Twigs white-villous; leaf-blades entire. 48. *S. alaxensis.*
Twigs puberulent; leaf-blades usually glandular-denticulate. 49. *S. Barrattiana.*
Bractlets oblong, yellow; leaf-blades usually broadly oblanceolate. 63. *S. Seemannii.*
Leaves oblanceolate or oblong-lanceolate; bractlets oblong.
Leaves silvery-silky beneath, not strongly reticulate; bractlets black. 50. *S. bella.*
Leaves white-tomentose beneath, strongly reticulate; bractlets brown. 51. *S. candida.*
Aments less than 1 cm. broad; ovary less than 5 mm. long.
Leaves broadly obovate.
Twigs puberulent; bractlets light brown; stamen 1. 52. *S. sitchensis.*
Twigs glabrous; bractlets blackish; stamens 2. 53. *S. Drummondiana.*
Leaves oblong, lanceolate, or oblanceolate.

Bractlets yellow or brown; stipes 3–4 times as long as the nectaries; style less than 0.5 mm. long. 54. *S. argyrocarpa.*
Bractlets fuscous; stipes less than twice as long as the nectaries.
Style about 0.5 mm. long; bractlets obtuse. 55. *S. arbusculoides.*
Style 1–2 mm. long.
Branches without a bloom; leaves tomentose beneath. 56. *S. pellita.*
Branches with a bloom; leaves white-silky beneath.
Aments peduncled and leafy-bracted. 57. *S. subcoerulea.*
Aments sessile and naked. 58. *S. pachnophora.*

X. ARCTICAE.

Aments on leafy peduncles.
Leaves grayish villous on both sides, less so on the upper.
Twigs white-villous or silky; branches yellow or grayish.
Leaves villous; capsules densely pubescent. 59. *S. brachycarpa.*
Leaves silky; capsules finely and sparingly pubescent. 60. *S. idahoensis.*
Twigs puberulent; branches usually purplish.
Bractlets black or with blackish tips.
Leaves oblong, 2–3 cm. long; bractlets obovate; branches divergent. 61. *S. pseudolapponum.*
Leaves oblanceolate or obovate, 3–6 cm. long; bractlets oblong; branches ascending. 62. *S. glaucops.*
Bractlets yellow, oblong. 63. *S. Seemannii.*
Leaves glabrate or when young covered with white hairs parallel to the midrib.
Shrubs not creeping, although often depressed.
Leaves broadly oval, often minutely glandular-dentate. 64. *S. subcordata.*
Leaves narrower.
Leaves oblong or oblanceolate, or ovate.
Leaves 2–4 cm. long; capsule 3–5 mm. long.
Bractlets yellow or brown, oblong; leaves elliptic or oblanceolate, thin, darkening in drying; twigs purple. 65. *S. desertorum.*
Bractlets fuscous at the apex; leaves oblong, not blackening in drying. 61. *S. pseudolapponum.*
Leaves 4–6 cm. long.
Bractlets fuscous; leaves elliptic or oblong, obtuse or acute, usually reticulate; glabrous only in age. 62. *S. glaucops.*
Bractlets yellow or brown; leaves usually short-acuminate, glabrous except when very young, not reticulate.
Leaves entire or sparingly glandular-denticulate, oblanceolate. 66. *S. Austinae.*
Leaves finely serrulate, elliptic, lanceolate, or oblanceolate. 67. *S. MacCalliana.*
Leaves linear-lanceolate. 68. *S. saskatchewana.*
Shrubs creeping; arctic or alpine.
Leaves obovate or oblanceolate; aments many-flowered. 69. *S. petrophila.*
Leaves narrowly oblanceolate; aments few-flowered. 70. *S. cascadensis.*
Aments naked, from lateral buds.
Leaves oblanceolate, strongly veined. 71. *S. Nelsonii.*
Leaves elliptic, not strongly veined. 72. *S. chlorophylla.*

XI. RETICULATAE.

Leaves covered beneath with long white silky hairs. 73. *S. Fernaldii.*
Leaves at least in age not silky.
Leaf-blade over 1 cm. long; aments comparatively many-flowered.
Filaments very hairy on the lower part; leaves strongly reticulate; bracts broadly obovate, fuscous, the upper portion almost glabrous. 74. *S. orbicularis.*
Filaments almost glabrous; leaves less strongly reticulate; bracts cuneate-oblong, yellow, almost glabrous. 75. *S. saximontana.*
Leaf-blade 1 cm. or less long; aments few-flowered; bractlets yellow, almost glabrous. 76. *S. nivalis.*

FAMILY 31. **FAGACEAE.** BEECH FAMILY.

1. **QUÉRCUS** (Tourn.) L. OAK.

Leaves lobed or divided, not evergreen; lobes rounded, obtuse or acute, but not spinulose-tipped.
Leaves bright green, early deciduous.
Upper scales of the cup with caudate prolongations. 1. *Q. macrocarpa.*
Upper scales of the cup not prolonged.
Mature leaves softly pubescent, almost velvety beneath, deeply divided.
Scales of the cup thin, not much thickened on the back. 2. *Q. submollis.*
Scales of the cup corky-thickened on the back. 3. *Q. utahensis.*
Mature leaves glabrate, puberulent, or somewhat pubescent, but not velvety beneath.

Cup flat, covering less than one-fourth of the acorn. 4. *Q. Vreelandii.*
Cup hemispheric, covering one-third to one-half of the acorn.
Mature leaves very thin, glabrate beneath or puberulent only on the veins; cup covering about one-half of the acorn. 5. *Q. leptophylla.*
Mature leaves firm, puberulent beneath; cup covering about one-third of the acorn.
Leaves mostly oblong in outline, lobed half way to the midrib or less, rather dull. 6. *Q. Gunnisonii.*
Leaves obovate in outline, divided deeper than half way to the midrib, very shining above.
Lobes of the leaves broadly oblong, rounded at the apex. 7. *Q. Gambellii.*
Lobes of the leaves ovate or triangular, acute. 8. *Q. novomexicana.*
Leaves pale or bluish green, more persistent.
Leaves broadly obovate, with narrow sinuses. 9. *Q. Eastwoodiae.*
Leaves oblong-obovate, or elliptic; sinuses broad.
Lobes oblong-ovate, obtuse or acutish, not mucronate. 10. *Q. venustula.*
Lobes triangular-ovate, mucronate. 11. *Q. Fendleri.*
Leaves persistent, usually evergreen, entire, sinuate or dentate, or if more deeply lobed, the lobes with spinulose tips.
Cup hemispheric; acorns barrel-shaped.
Scales of the cups decidedly corky-thickened on the back.
Leaves decidedly crisp, sinuately lobed; lobes distinctly spinulose-tipped. 12. *Q. pungens.*
Leaves flat, sinuate-dentate or entire; teeth mucronate, or sometimes slightly spinulose-tipped.
Acorns 6–7 mm. thick; cup shallow, enclosing about one-third of the acorn; leaves usually sinuate-dentate. 13. *Q. undulata.*
Acorns about 1 cm. thick or more; cup deeper, enclosing about half of the acorn.
Leaves usually entire, except those of the young shoots. 14. *Q. grisea.*
Leaves lobed, with few (5–7) lobes. 15. *Q. panciloba.*
Scales of the cups thin, only slightly thickened on the back; leaves glabrate and shining above in age. 16. *Q. Wilcoxii.*
Cup more or less turbinate; acorns elongated-ovoid. 17. *Q. turbinella.*

Family 32. **BETULACEAE.** Birch Family.

Bracts of the mature pistillate aments membranous, in ours 3-lobed, deciduous with the fruit. 1. Betula.
Bracts of the mature pistillate aments thickened and woody, persistent. 2. Alnus.

1. **BÉTULA** (Tourn.) L. Birch.

Bark separating into layers or sheets, the very thin outer layer peeling into small shreds; all trees.
Bark chalky white to silvery gray.
Leaves broadly ovate, with acute apex, mostly subcordate base, and spreading teeth; twigs mostly glabrous; middle lobe of the bractlets acute, slightly longer than the rounded lateral ones. 1. *B. subcordata.*
Leaves narrowly ovate, with long-acute or acuminate apex, rounded or cuneate base, and teeth directed forward; twigs pubescent; middle lobe of the bractlets narrow, rounded at the apex, about twice as long as the acute or obtuse lateral ones. 2. *B. papyrifera.*
Bark yellowish or reddish brown, often very dark; twigs very glandular.
Leaves ovate, very thin, dark green, acute at the apex, irregularly doubly-serrate, with long-pointed, slender teeth. 3. *B. occidentalis.*
Leaves deltoid or ovate, thick, bronze-green, long-acuminate at the apex, coarsely and more regularly serrate. 4. *B. alaskana.*
Bark not separating into layers; outer bark not peeling into shreds.
Samara-wing broader than the body.
Twigs and branchlets glandular-resiniferous, not hairy.
Lateral lobes of the bractlets spreading, obliquely ovate, auricled at the base; trees.
Leaves very thin; fruiting aments narrowly cylindric, elongate, less than 1 cm. thick; lateral lobes of the bractlets obtuse or rounded; claw much shorter than the middle lobe. 5. *B. Piperi.*
Leaves thick; fruiting aments broadly cylindric, stout, more than 1 cm. thick; lateral lobes of the bractlets mostly acute; claw as long as the middle lobe. 6. *B. utahensis.*
Lateral lobes of the bractlets ascending, obliquely rhombic, not auricled at the base; shrubs or trees.
Shrubs or small shrub-like trees; bark shining, dark red-brown, smooth; leaves broadly ovate, usually less than 4 cm. long, coarsely and irregularly serrate, thin, dark green, obtuse or acute at the apex, mostly rounded at the base; twigs densely glandular-resiniferous. 7. *B. fontinalis.*

Trees, often very large, never shrub-like; bark ashy gray or brown, roughened; leaves ovate, sometimes lobed, 4–7 cm. long, finely serrate, dull bronze-green, acute at the apex, truncate at the base; twigs but slightly glandular-resiniferous. 8. *B. montanensis.*

Twigs and branchlets more or less pubescent, not or sparingly glandular-resiniferous; shrubs or shrub-like trees.

Leaves oval or rhombic-ovate.

Leaves narrowly oval or rhombic-ovate, 6 cm. long or more, sharply serrate or dentate; apex acute, base cuneate; twigs finely pubescent, not glandular; middle lobe of the bractlets triangular, obtuse; lateral lobes rounded, obliquely rhombic; fruiting aments 2–4 cm. long. 9. *B. Sandbergii.*

Leaves broadly oval, less than 4 cm. long, acute at both ends, serrate or serrate-crenate; twigs pubescent and sparingly glandular; middle lobe of the bractlets rounded, as broad as or broader than the ascending lateral ones; fruiting aments less than 2 cm. long. 10. *B. Elrodiana.*

Leaves obovate, rounded at the apex, cuneate at the base; twigs puberulent and with scattered coarse hairs, sparingly glandular. 11. *B. obovata.*

Samara-wing narrower than the body; shrubs mostly low.

Twigs and branchlets pubescent, slightly glandular.

Leaves finely crenate or crenate-serrate, oval, acute at both ends; twigs at first puberulent, at length glabrate. 12. *B. crenata.*

Leaves coarsely serrate, obovate, acute or obtuse at the apex, cuneate at the base; twigs with long scattered coarse hairs. 13. *B. glandulifera.*

Twigs and branchlets glabrous, densely glandular-resiniferous; leaves obovate or orbicular, crenate-serrate. 14. *B. glandulosa.*

2. ÁLNUS (Tourn.) Hill. Alder.

Nut bordered on each side with a membranous wing-margin, fully as broad as the nut; twigs resinous-granuliferous; stamens 4.

Leaves irregularly serrate, usually very oblique at the base, slightly paler beneath. 1. *A. fruticosa.*

Leaves incised and sharply double-serrate, green on both sides. 2. *A. sinuata.*

Nut merely acute-margined.

Leaves distinctly lobed and doubly serrate; stamens 4.

Mature leaves pubescent, especially beneath, usually glaucous beneath; bark white-speckled. 3. *A. incana.*

Mature leaves glabrous, except on the veins beneath and in their axils, green on both sides; bark not speckled. 4. *A. tenuifolia.*

Leaves not lobed, merely sinuate and glandular-dentate; stamens 1–3, usually 2. 5. *A. rhombifolia.*

Family 33. CORYLACEAE. Hazelnut Family.

Pistillate flowers many in a cylindric ament; nuts small, enclosed in a bladdery bract. 1. Ostrya.

Pistillate flowers few in a head-like ament; nut large, in a leaf-like involucre. 2. Corylus.

1. ÓSTRYA (Mich.) Scop. Ironwood, Hop-hornbeam. 1. *O. virginiana.*

2. CÓRYLUS (Tourn.) L. Hazelnut.

Twigs glabrous or nearly so; beak of the involucre fully twice as long as the nut, strongly ribbed. 1. *C. rostrata.*

Twigs decidedly hirsute, sometimes somewhat glandular; beak of involucre not more than half longer than the nut, not strongly ribbed. 2. *O. californica.*

Family 34. ULMACEAE. Elm Family.

Fruit a samara; embryo straight. 1. Ulmus.

Fruit a drupe; embryo with conduplicate cotyledons. 2. Celtis.

1. ÚLMUS (Tourn.) L. Elm. 1. *U. americana.*

2. CÉLTIS (Tourn.) L. Hackberry.

Leaf-blades neither coriaceous nor pale beneath, nor strongly rugose.

Leaves smooth above. 1. *C. occidentalis.*

Leaves very rough, pustulate-scabrous above. 2. *C. crassifolia.*

Leaf-blades coriaceous, strongly reticulate and rugose, paler beneath, often yellowish green.

Leaf-blades strongly pubescent beneath.

Pedicels 15–20 mm. long, more than twice as long as the fruit; leaf-blades toothed. 3. *C. rugulosa.*

Pedicels 4–10 mm. long, usually less than twice as long as the fruit; leaf-blades subentire. 4. *C. reticulata.*

Leaf-blades glabrous beneath, or slightly hispidulous on the veins and in their axils. 5. *C. Douglasii.*

Family 35. **CANNABINACEAE.** Hemp Family.

Erect herbs; leaves digitately divided to near the base; pistillate flowers in axillary stiff spikes. 1. Cannabis.
Twining vines; leaves merely digitately lobed; pistillate flowers in drooping ament-like spikes with imbricate bracts. 2. Humulus.

1. CÁNNABIS L. Hemp. 1. *C. sativa.*

2. HŪMULUS L. Hops.

Leaf-blades 3–7-lobed about half-way to the base, with ovate, acute or short-acuminate lobes; those of the inflorescence 3-lobed or undivided. 1. *H. Lupulus.*
Leaf-blades 5–7-divided to near the base, with lanceolate, long-acuminate divisions; those of the inflorescence 5-cleft. 2. *H. neomexicanus.*

Family 36. **URTICACEAE.** Nettle Family.

Herbs with stinging hairs; leaves opposite; flowers not involucrate. 1. Urtica.
Plants without stinging hairs; leaves alternate; flowers involucrate by leafy bracts. 2. Parietaria.

1. URTÌCA (Tourn.) L. Nettle.

Stipules membranous, oblong or broadly lanceolate, obtuse or acutish, often 1 cm. long.
Stem and leaves densely pubescent.
Stem and lower surface of the leaves coarsely velvety. 1. *U. holosericea.*
Stem finely strigose; lower surface of the leaves finely short-pubescent. 2. *U. Breweri.*
Stem nearly glabrous; leaves puberulent, in age becoming glabrate. 3. *U. Lyallii.*
Stipules narrowly lanceolate or linear, attenuate.
Teeth of the leaves ovate, strongly directed forward.
Stem glabrous except the presence of a few bristles; leaves thin, almost glabrous, not strongly veined.
Petioles one-third to one-half as long as the cordate or broadly ovate leaf-blades. 4. *U. cardiophylla.*
Petioles one-fifth to one-third as long as the lanceolate or ovate-lanceolate leaf-blades. 5. *U. viridis.*
Stem more or less strigose or hirsute; leaves decidedly hairy, especially on the very strong veins.
Leaf-blades lanceolate, scarcely cordate at the base.
Stem sparingly strigose and bristly. 6. *U. gracilis.*
Stem densely strigose, scarcely at all bristly. 7. *U. strigosissima.*
Leaf-blades broad, deeply cordate at base. 8. *U. dioica.*
Teeth of the leaves broadly triangular, not strongly directed forward; stem and leaves glabrous or nearly so. 9. *U. gracilenta.*

2. PARIETÀRIA (Tourn.) L. Pellitory.

Leaf-blades lanceolate, 2–7 cm. long, twice as long as the petioles or longer.
Plant comparatively dark green; stem densely puberulent; sepals lanceolate, acute. 1. *P. pennsylvanica.*
Plant very light green; stem long-villous; sepals ovate, often obtuse. 2. *P. occidentalis.*
Leaf-blades oblong or ovate-oblong, 0.5–2 cm. long, not twice as long as the petioles. 3. *P. obtusa.*

Family 37. **POLYGONACEAE.** Buckwheat Family.

Leaves without stipules; flowers or flower-clusters subtended by involucres of partly united bracts; stamens mostly 9.
Involucres from tubular to campanulate, of several united bracts.
Involucres awnless, campanulate or turbinate, 4–8-toothed or -lobed. 1. Eriogonum.
Involucres awn-pointed.
Involucres herbaceous; flowers exserted; achenes lenticular. 2. Oxytheca.
Involucres leathery or horny; flowers included; achenes 3-angled.
Involucres with 3–6 awn-tipped spurs near the base, 1–3-flowered, in open dichotomous panicles. 3. Centrostegia.
Involucres without spurs, 1-flowered.
Involucres 6-angled, sulcate; filaments adnate to the base of the perianth. 4. Chorizanthe.
Involucres 3-angled; filaments adnate to the whole tube of the perianth. 5. Acanthogonum.
Involucres bract-like, 2-cleft. 6. Pterostegia.
Leaves with sheathing stipules (ocreae); flower-clusters not involucrate; stamens 4–8.
Stigmas tufted.
Sepals 6; styles 3; achenes triangular. 7. Rumex.
Sepals 4; styles 2; achenes lenticular. 8. Oxyria.

Stigmas not tufted.
Leaf-blades jointed at the base; ocreae 2-lobed, becoming lacerate; filaments, at least the inner, dilated. 9. POLYGONUM.
Leaf-blades not jointed at the base; ocreae not 2-lobed; filaments slender.
Ocreae cylindric, truncate. 10. PERSICARIA.
Ocreae oblique, more or less open on the side facing the leaf.
Herbs, not climbing or twining; sepals neither winged nor keeled.
Flowers in simple spike-like racemes; plants with thickened tuberous rootstocks. 11. BISTORTA.
Flowers in several racemes or panicles; rootstocks not tuberous-thickened.
Racemes in terminal corymbs; plants smooth.
Embryo in the center of the endosperm; leaves sagittate or cordate. 12. FAGOPYRUM.
Embryo at one side of the endosperm; leaves neither sagittate nor cordate. 13. ACONOGONUM.
Racemes not in terminal corymbs; plant prickly; embryo at one side of the endosperm. 14. TRACAULON.
Herbaceous vines, with twining stems; sepals winged or keeled. 15. BILDERDYKIA.

1. ERIÓGONUM Michx. UMBRELLA PLANT.

Achenes 3-winged; perianth not accrescent; perennials with a thick taproot and short crown. I. ALATA.
Achenes merely 3-angled; perianth accrescent in fruit.
Perianth with a stipe-like base; bracts verticillate, leaf-like.
Involucres in branching cymes; perennials with a branched woody caudex; flowering branches scapiform. II. ERIANTHA.
Involucres in simple or compound umbel-like or head-like clusters.
Perianth pubescent.
Perianth yellow; leaf-blades spatulate or oblanceolate.
Involucres undulate-dentate, tomentose, many, umbellate; embryo straight; perennials with a cespitose caudex. III. FLAVA.
Involucres deeply lobed, solitary, or 2 or 3 together; embryo curved; perennials, subacaulescent or suffruticose. IV. CAESPITOSA.
Perianth white; leaf-blades ovate or elliptic; cespitose subacaulescent perennials. V. PYROLAEFOLIA.
Perianth glabrous; perennials with a cespitose caudex, with the leaves clustered at the ends of the branches. VI. UMBELLATA.
Perianth without stipe-like base.
Ovaries and fruit pubescent; involucres few, capitate or subcymose; perennials with scapiform stems. VII. LACHNOGYNA.
Ovaries and fruit glabrous or nearly so.
Involucres in head-like or umbellate clusters.
Perianth-lobes very unequal; perennials with a pulvinate-cespitose woody caudex. VIII. HETEROSEPALA.
Perianth-lobes equal or nearly so.
Heads solitary or, if more than one, proliferous-umbellate, with the central head sessile; cespitose perennials. IX. CAPITATA.
Heads several, paniculate, corymbose or cymose-umbellate.
Herbs with perennial caudices; heads paniculate, almost ebracteate; perennials with a stout rootstock. X. ELATA.
Leafy undershrubs, with fascicled leaves; heads cymose-umbellate; suffruticose perennials. XI. FASCICULATA.
Involucres in open cymes.
Bracts scale-like.
Involucres, except those of the forks of the inflorescence, sessile, the uppermost conglomerate.
Cymes repeatedly dichotomous or trichotomous.
Perianth-lobes very dissimilar; perennials. XII. DICHOTOMA.
Perianth-segments not very dissimilar.
Perennials, shrubby at least at the base. XIII. CORYMBOSA.
Annuals, with a strict herbaceous stem. XIV. ANNUA.
Cymes with more or less raceme-like branches.
Perennials. XV. RACEMOSA.
Annuals. XVI. VIRGATA.
Involucres all peduncled, never conglomerate; scapose annuals (except *E. tenellum*); leaves basal, petioled. XVII. PEDUNCULATA.
Bracts leaf-like.
Primary stem-leaves scale-like, with a pair or a fascicle of secondary well-developed leaves in their axils; caulescent annuals. XVIII. DIVARICATA.
Primary stem-leaves well-developed, also often with secondary leaves in their axils.
Perianth petaloid, not closely investing the achenes; involucres toothed or lobed.
Involucres sessile; leaves basal, petioled; bracts sessile, elliptic; scapose annuals. XIX. PUBERULA.

Involucres peduncled; leaves and bracts similar, verticillate, linear; caulescent annuals. XX. SPERGULINA.
Perianth herbaceous, closely investing the achene; involucre divided to near the base; leaves spatulate; caulescent annuals. XXI. SALSUGINOSA.

I. ALATA.

Involucres hairy, 3–3.5 mm. long and 1.5–2 mm. wide; stem and leaves manifestly hirsute and tomentose. 1. *E. alatum.*
Involucres glabrous, 2–2.5 mm. long and of the same width; stem and leaves nearly glabrous. 2. *E. triste.*

II. ERIANTHA.

Perianth whitish; style hairy at least to the middle. 3. *E. Jamesii.*
Perianth yellow; style hairy only at the base.
Involucres 6–8 mm. long; leaf-blades oblong or oblanceolate. 4. *E. Bakeri.*
Involucres 9–10 mm. long; leaf-blades suborbicular to oval. 5. *E. arcuatum.*

III. FLAVA.

Perianth (externally) pubescent throughout.
Involucre elongated-obconic, 6–8 mm. long. 6. *E. Piperi.*
Involucre turbinate, 4–5 mm. long.
Stipe-like base of the perianth very short; old leaf-bases permanently tomentose.
Leaf-bases thickened; perianth copiously pubescent; leaf-blades silky above; involucres usually several. 7. *E. flavum.*
Leaf-bases not thickened; leaf-blades slightly floccose above; involucres few.
Perianth 6–7 mm. long. 8. *E. chloranthum.*
Perianth about 4 mm. long. 9. *E. polyphyllum.*
Stipe-like base of the perianth slender; old leaf-bases glabrous. 10. *E. xanthum.*
Perianth pubescent at the base only. 11. *E. androsaceum.*

IV. CAESPITOSA.

Involucres with comparatively short, ovate, merely spreading lobes, long-peduncled; leaves linear or nearly so, revolute; stems short, leafy. 12. *E. thymoides.*
Involucres with long reflexed lobes.
Densely cespitose, subacaulescent; involucre solitary.
Perianth in flowers 3–4 mm. long. 13. *E. caespitosum.*
Perianth in flowers 2 mm. long. 14. *E. andinum.*
Caulescent, suffruticose; involucres 1–5.
Perianth greenish yellow, 6–8 mm. long; leaves spatulate or oblanceolate. 15. *E. sphaerocephalum.*
Perianth ochroleucous, 5 mm. long; leaves linear or linear-oblanceolate. 16. *E. fasciculifolium.*

V. PYROLAEFOLIA.

One species. 17. *E. pyrolaefolium.*

VI. UMBELLATA.

Leaf-blades ovate or cordate. 18. *E. compositum.*
Leaf-blades from obovate or orbicular to oblanceolate.
Involucres solitary. 19. *E. Porteri.*
Involucres several, umbellate.
Perianth deeply yellow.
Leaves not densely tomentose beneath.
Umbels simple; leaves spatulate. 20. *E. neglectum.*
Umbels more or less compound; leaves oblanceolate. 21. *E. biumbellatum.*
Leaves densely tomentose beneath.
Inflorescence more or less compound. 22. *E. stellatum.*
Inflorescence simple.
Leaf-blades obovate-spatulate or oval; perianth 6–7 mm. long. 23. *E. umbellatum.*
Leaf-blades rhombic-ovate or rhombic-oval; perianth 7–8 mm. long. 24. *E. Rydbergii.*
Perianth ochroleucous, in age turning purplish rose-colored.
Scape naked up to the umbel; leaves spatulate.
Perianth about 6 mm. long; leaf-blades spatulate-oblong or elliptic, glabrous above at maturity. 25. *E. subalpinum.*
Perianth about 8 mm. long; leaf-blades oval or ovate, permanently tomentose above. 26. *E. aridum.*
Scape with at least one whorl of leaves below the umbel; leaf-blades oblanceolate. 27. *E. heracleoides.*

VII. LACHNOGYNA.

Leaves and scape silky; the latter elongate, 1 dm. high or more; perennials with a taproot and cespitose crown.
Inflorescence irregularly branched. 28. *E. lachnogynum.*
Inflorescence subcapitate. 29. *E. Tetraneuris.*
Leaves lanate, subsessile, obtuse; scape short, less than 3 cm. long, or none; pulvinate-cespitose perennials; involucres capitate.
Leaf-blades elliptic or oval, not strongly revolute; scape 1–3 cm. long.
Perianth yellow; lobes of the involucres lanceolate, more than twice as long as the tube. 30. *E. longilobum.*
Perianth white or pinkish; lobes of the involucres not twice as long as the tube.

Lobes of the involucres oblong or ovate, with a more or less scarious white or pink margin. 31. *E. Shockleyi.*
Lobes of the involucres triangular, not scarious-margined. 32. *E. pulvinatum.*
Leaf-blades linear-oblong, strongly revolute; scape none or very short. 33. *E. acaule.*

VIII. HETEROSEPALA.

Heads several, cymose-proliferous, the central head sessile. 34. *E. proliferum.*
Heads solitary.
Involucres about 7 mm. long; leaf-blades oval. 35. *E. orthocaulon.*
Involucres 4–5 mm. long.
Perianth bright yellow or in age purplish; leaf-blades about as broad as long. 36. *E. ovalifolium.*
Perianth cream-colored, ochroleucous, or isabel-colored.
Perianth 2.5–3.5 mm. long; leaf-blades rounded-oval or ovate. 37. *E. depressum.*
Perianth 4–5 mm. long; leaf-blades elliptic, oblong, or spatulate. 38. *E. ochroleucum.*

IX. CAPITATA.

Perianth yellow.
Bracts and involucres membranous; the former broadly lanceolate; the lobes of the latter ovate or triangular; densely pulvinate-cespitose perennials.
Perianth bright yellow. 39. *E. chrysops.*
Perianth ochroleucous, sometimes tinged with rose. 40. *E. Kingii.*
Bracts and involucres firm; the former subulate or narrowly lanceolate (except in *E. medium*); the lobes of the latter lanceolate; perennials with a cespitose woody caudex.
Perianth ochroleucous. 41. *E. loganum.*
Perianth golden yellow.
Leaf-blades oblanceolate or oblong, tomentose on both sides. 42. *E. chrysocephalum.*
Leaf-blades linear or narrowly linear-oblanceolate, in age greener above. 43. *E. medium.*
Perianth white or rose-colored.
Perianth glabrous; perennials with a cespitose woody caudex.
Lobes of the involucres lanceolate, acute, not scarious-margined.
Heads about 1 cm. broad; perianth fully 3 mm. long; leaf-blades 3–8 cm. long. 44. *E. Brandegei.*
Heads about 0.5 cm. broad; perianth about 2 mm. long; leaf-blades 1–2 cm. long. 45. *E. depauperatum.*
Lobes of the involucres oval to orbicular, scarious-margined.
Leaves glabrate above; perianth 3–5 mm. long; involucres in small heads.
Lobes of the involucres much shorter than the tube. 46. *E. coloradense.*
Lobes of the involucres about as long as the tube. 47. *E. pauciflorum.*
Leaves white-tomentose on both sides; perianth 2.5 mm. long; involucres solitary. 48. *E. mancum.*
Perianth pubescent.
Suffruticose leafy-stemmed perennial, with decumbent branches, villous. 49. *E. multiceps.*
Pulvinate perennial, acaulescent, silky-hirsute. 50. *E. villiflorum.*

X. ELATA.

One species. 51. *E. elatum.*

XI. FASCICULATA.

One species. 52. *E. polifolium.*

XII. DICHOTOMA.

Stem leafy, suffrutescent; outer perianth-segments suborbicular. 53. *E. niveum.*
Stem scapiform, with a cespitose woody caudex; outer perianth-segments oval.
Inflorescence more or less floccose.
Involucres 5–6 mm. long; branches of the inflorescence ascending-spreading. 54. *E. dichotomum.*
Involucres 3–4 mm. long; branches of the inflorescence strongly ascending, almost erect. 55. *E. lachnostegium.*
Inflorescence glabrous. 56. *E. strictum.*

XIII. CORYMBOSA.

Branches of the inflorescence not grooved.
Perianth yellow.
Plants more than 2 dm. high; leaves not heath-like.
Leafy shrubs; inflorescence shorter than the stem.
Leaf-blades elliptic, oval, or broadly spatulate; involucres glabrous. 57. *E. aureum.*
Leaf-blades oblanceolate; involucres tomentose. 58. *E. idahoense.*
Undershrubs, leafy only at the base; inflorescence longer than the stem.
Involucres villous-tomentose; leaf-blades equally white on both sides.
Leaf-blades narrowly oblanceolate; branches of the inflorescence strongly ascending. 59. *E. orendense.*
Leaf-blades broadly spatulate; branches of the inflorescence more spreading. 60. *E. lagopus.*

Involucres glabrate; leaves usually less tomentose above.
Leaf-blades oblanceolate or broadly oblong, not strongly revolute.
Involucres strongly angled, all sessile. 61. *E. Thompsonae.*
Involucres not strongly angled; those of the forks peduncled. 62. *E. campanulatum.*
Leaf-blades linear or narrowly linear-oblanceolate, usually with revolute margins.
Involucres in the forks peduncled. 63. *E. brevicaule.*
Involucres all sessile. 64. *E. micranthum.*
Plants depressed, less than 1 dm. high, with heath-like leaves. 65. *E. contortum.*

Perianth white or rose-colored.
Suffruticose plants, leafy only at the base; inflorescence longer than the stem.
Involucres tomentose, all sessile. 66. *E. spathulatum.*
Involucres glabrous, at least in age.
Leaf-blades spatulate or elliptic.
Pedicels of the lower forks scarcely longer than the involucres; lobes of the latter as broad as long; perianth 3 mm. long. 67. *E. spathuliforme.*
Pedicels of the lower forks several times as long as the involucres; lobes of the latter longer than broad; perianth 2 mm. long. 68. *E. Ostlundi.*
Leaf-blades narrowly oblanceolate to linear.
Involucres all sessile.
Leaves mostly flat; involucres narrowly turbinate; perianth 2–2.5 mm. long. 69. *E. lonchophyllum.*
Leaves mostly revolute; involucres campanulate; perianth 3–3.5 mm. long. 70. *E. nudicaule.*
Involucres in the forks of the inflorescence, at least the lower, distinctly peduncled.
Involucres broadly campanulate, about as wide as long. 71. *E. scoparium.*
Involucres turbinate, decidedly longer than broad.
Branches of the inflorescence almost erect. 72. *E. grangerense.*
Branches of the inflorescence ascending-spreading.
Leaf-blades narrowly linear-oblanceolate or linear, usually revolute. 73. *E. tristichum.*
Leaf-blades spatulate to oblanceolate, flat. 74. *E. salicinum.*
Shrubby plants, with the leafy stem usually longer than the inflorescence.
Leaves not revolute or scarcely so, distinctly petioled.
Leaf-blades relatively broad, oblong to rounded-oval or obovate, obtuse.
Involucres 4–5 mm. long. 75. *E. Fendlerianum.*
Involucres 2–3 mm. long.
Branches of the inflorescence divaricate. 76. *E. divergens.*
Branches of the inflorescence ascending.
Leaf-blades rounded or subcordate at the base, decidedly crisp. 77. *E. Jonesii.*
Leaf-blades acutish at the base, not crisp, except sometimes the margins.
Inflorescence and stem loosely floccose, in age inclined to become glabrate. 78. *E. corymbosum.*
Inflorescence and stem permanently and densely white-tomentose. 79. *E. salinum.*
Leaf-blades narrow, spatulate to linear, mostly acute at the apex.
Inflorescence many times compound, copiously branched; internodes long.
Inflorescence tomentulose, broom-like, with strongly ascending branches; involucres about 1.5 mm. long. 80. *E. effusum.*
Inflorescence glabrous, lax and with spreading branches; involucres 2–2.5 mm. long. 74. *E. salicinum.*
Inflorescence less compound; branches and internodes short, mostly spreading.
Involucres in the forks peduncled; peduncles slightly floccose. 81. *E. microthecum.*
Involucres all sessile; peduncles densely white-tomentose. 82. *E. nebraskense.*
Leaves linear or linear-oblanceolate, strongly revolute, subsessile.
Peduncles not thickened upwards.
Leaves glabrous or loosely floccose above.
Stem 1–4 dm. high; leaves floccose above. 83. *E. Simpsoni.*
Stem less than 1 dm. high; leaves glabrous above. 84. *E. Mearnsii.*
Leaves densely villous on both sides. 85. *E. bicolor.*
Peduncles clavate-thickened upwards. 86. *E. clavellatum.*
Branches of the inflorescence strongly angled and deeply grooved. 87. *E. sulcatum.*

XIV. Annua.

One species. 88. *E. annuum.*

XV. Racemosa.

Leaves crowded on the short branches of the caudex; blades abruptly narrowed at the base or subcordate. 89. *E. racemosum.*

Leaves scattered on the fruticose branches; blades tapering at the base.
Leaf-blades elliptic or oblanceolate. 90. *E. Wrightii.*
Leaf-blades linear. 91. *E. leptocladon.*

XVI. VIRGATA.

Stem neither divaricately branched, nor densely floccose.
Involucres cylindric; perianth-segments oblong or oval; plant with few branches.
Involucres about 3 mm. long. 92. *E. vimineum.*
Involucres about 2 mm. long. 93. *E. Baileyi.*
Involucres campanulate, 1–1.5 mm. long; perianth-segments cuneate, flabellate, or fiddle-shaped; plants with numerous branches.
Branches not incurved in age; leaf-blades ovate or oblong. 94. *E. densum.*
Branches incurved in age; leaf-blades orbicular or subreniform. 95. *E. nidularium.*
Stem divaricately branched, densely floccose. 96. *E. Plumatella.*

XVII. PEDUNCULATA.

Perennials with a woody caudex. 97. *E. tenellum.*
Annuals.
Perianth glabrous or in *E. Thomasii* and *E. nutans* somewhat pubescent; segments mostly obtuse or rounded at the apex.
Peduncles not glandular.
Scape and its branches glabrous.
Peduncled reflexed or at least divaricate; leaves tomentose on both sides, less so above.
Involucres 1.5–2 mm. long; perianth 1.5–2 mm. long.
Peduncles shorter than the involucres; outer perianth-lobes ovate or subreniform.
Perianth pale yellow; outer segments subreniform. 98. *E. Hookeri.*
Perianth white; outer segments ovate. 99. *E. deflexum.*
Peduncles longer than the involucres; outer perianth-segments obovate or panduriform; perianth white or pinkish. 100. *E. cernuum.*
Involucres 0.5 mm. long; perianth 1–1.5 mm. long, yellowish with reddish veins. 101. *E. Wetherillii.*
Peduncles erect or ascending.
Leaves more or less tomentose beneath.
Involucres 1.5–2 mm. long.
Perianth yellow; segments similar. 102. *E. pusillum.*
Perianth white or rose-colored; segments unlike.
Involucres campanulate; outer perianth-segments flabellate. 103. *E. rotundifolium.*
Involucres turbinate; outer perianth-segments not flabellate.
Outer perianth-segments oblong-ovate, the inner ones entire. 104. *E. insigne.*
Outer perianth-segments subreniform, the inner ones 3-toothed, much smaller. 105. *E. turbinatum.*
Involucres scarcely 1 mm. long; perianth yellowish or white, usually somewhat hispidulous at the base. 106. *E. Thomasii.*
Leaves green, glabrate or sparingly pilose. 107. *E. Gordonii.*
Scape more or less pubescent, at least at the nodes.
Leaves white-lanate beneath. 108. *E. subreniforme.*
Leaves green on both sides, sparingly pilose. 109. *E. trinervatum.*
Peduncles glandular; leaves tomentose.
Outer perianth-segments oval, emarginate or retuse, the inner ones oblong. 110. *E. nutans.*
Outer perianth-segments ovate-cordate, the inner ones oblong-ovate, acute. 111. *E. Parryi.*
Perianth pubescent; segments ovate or lanceolate, acute.
Peduncles and usually also the scape glandular; leaves green, merely hirsute beneath. 112. *E. glandulosum.*
Peduncles and scape not glandular.
Leaves floccose or tomentose beneath. 113. *E. Ordii.*
Leaves green, merely pilose or hirsute.
Accessory branches at the lower forks of the inflorescence many and nearly as strong as the primary ones; all divaricate.
Scape slightly if at all inflated. 114. *E. trichopodum.*
Scape strongly inflated under the first node. 115. *E. fusiforme.*
Accessory branches of the lowest node of the inflorescence few and small or none; branches ascending; scape usually inflated. 116. *E. inflatum.*

XVIII. DIVARICATA.

Leaves green, puberulent; involucres 5-cleft, usually sessile. 117. *E. divaricatum.*
Leaves floccose beneath; involucres 5-toothed, peduncled. 118. *E. angulosum.*

XIX. PUBERULA.

One species. 119. *E. puberulum.*

XX. SPERGULINA.

Leaves green, merely pilose; scape glandular. 120. *E. spergulinum.*
Leaves tomentose beneath; scape finely pubescent. 121. *E. pharnaceoides.*

XXI. SALSUGINOSA.

One species. 122. *E. salsuginosum.*

2. OXYTHÈCA Nutt.

Stem-leaves and bracts lanceolate, connate only at the base; involucres pedicelled. 1. *O. foliosa.*

Stem-leaves and bracts connate, forming a nearly circular disk; involucres sessile. 2. *O. perfoliata.*

3. CENTROSTÈGIA A. Gray. 1. *C. Thurberi.*

4. CHORIZÁNTHE R. Br.

Involucre not strongly sulcate, 5-toothed; filaments adnate to the perianth nearly up to the base of the lobes. 1. *C. Watsoni.*

Involucres strongly sulcate, 6-toothed; filaments adnate only to the lower part of the perianth-tube.

Leaves linear-oblanceolate to linear. 2. *C. brevicornu.*

Lower leaves broadly spatulate. 3. *C. spathulata.*

5. ACANTHÓGONUM Torr. 1. *A. rigidum.*

6. PTEROSTÈGIA F. & M. 1. *P. drymarioides.*

7. RÙMEX L. DOCK, SORREL.

Flowers dioecious; foliage acid.

Leaves with auricled or hastate bases.

Inner perianth-lobes not developed into wings in fruit; achenes granular. 1. *R. Acetosella.*

Inner perianth-lobes developed into wings in fruit; achenes smooth. 2. *R. Acetosa.*

Leaves narrowed at the base, neither auricled nor hastate. 3. *R. paucifolius.*

Flowers perfect, or andro-polygamous; foliage not acid.

Inner perianth-lobes entire, undulate, or denticulate.

Inner perianth-lobes in fruit without tubercles.

Inner perianth-lobes in fruit more than 2 cm. broad; plants perennial, with deep-seated woody rootstock. 4. *R. venosus.*

Inner perianth-lobes in fruit less than 1.5 cm. in diameter.

Plants perennial, with clusters of tuberous roots; inner perianth-lobes in fruit 1–1.5 cm. broad.

Achene 7 mm. long or more; inner perianth-lobes in fruit broader than long; plant low. 5. *R. salinus.*

Achenes about 5 mm. long; inner perianth-lobes in fruit longer than broad. 6. *R. hymenosepalus.*

Plants with taproots or thickened rootstocks; inner perianth-lobes in fruit 5–10 mm. broad.

Plants low, less than 3 dm. high, perennial, with short tuber-like rootstock; fruit maturing before the inner perianth-lobes become enlarged. 7. *R. praecox.*

Plants tall, perennial, with a taproot, not with a tuber-like rootstock; inner perianth-lobes well enlarged in fruit.

Basal leaves 2–3 cm. wide, acute or rarely rounded at the base. 8. *R. hesperius.*

Basal leaves 5–20 cm. wide, rounded, cordate, or truncate at the base.

Inner perianth-lobes in fruit with rounded apex, not conspicuously punctate.

Inner perianth-lobes in fruit 8–10 mm. wide. 9. *R. conjinis.*

Inner perianth-lobes in fruit 5–6 mm. wide. 10. *R. occidentalis.*

Inner perianth-lobes abruptly pointed, conspicuously punctate.

Fruiting inner perianth-lobes about as broad as long, sinuate on the margin. 11. *R. densiflorus.*

Fruiting inner perianth-lobes longer than broad, sharply dentate. 12. *R. subalpinus.*

Inner perianth-lobes or at least one of them bearing a tubercle in fruit; perennials with a taproot.

Only one perianth-lobe tubercled.

Leaves dark green, more or less crisp; fruiting inner perianth-lobes 8–9 mm. broad, reniform. 13. *R. Patientia.*

Leaves pale green, not crisp; fruiting inner perianth-lobes 5–6 mm. broad, deltoid-ovate. 14. *R. altissimus.*

All three perianth-lobes bearing tubercles.

Leaves dark green, crisp; fruiting perianth-lobes ovate to reniform, denticulate. 15. *R. crispus.*

Leaves pale green, not crisp; fruiting perianth-lobes deltoid, entire. 16. *R. mexicanus.*

Inner perianth-lobes in fruit spinulose-toothed on the margin.

Tall plants; lower leaf-blades cordate at the base; one tubercle. 17. *R. obtusifolius.*

Low plants; lower leaf-blades narrowed at the base; three tubercles.
18. *R. maritimus.*

8. OXÝRIA Hill. Mountain Sorrel. 1. *O. digyna.*

9. POLÝGONUM (Tourn.) L. Knotweed, Doorweed, Knotgrass.

Fruit erect.
Inflorescence of small axillary clusters scattered more or less thoroughout the plant; all except *P. minimum* with elongated stems or branches; perianth-lobes never keeled near the apex.
Plants copiously leafy throughout; upper leaves scarcely reduced and more crowded.
Very slender and low annuals, with red wiry, terete, non-striate stems.
1. *P. minimum.*
Stouter and larger plants, often perennial, with prominently striate stems, usually 3–8 dm. long.
Perianth-lobes with yellowish green margins; plant erect, with spreading branches in age; leaves broad, yellowish green. 2. *P. erectum.*
Perianth-lobes with white, pink or purplish margins; plant prostrate or diffusely spreading; leaves from bright to pale bluish green.
Leaves thick, prominently veined, oblong, oval, or spatulate, obtuse or rounded at the apex, usually pale; ocreae very conspicuous; faces of the achenes granular. 3. *P. buxiforme.*
Leaves thin, not prominently veined, bright green; ocreae not conspicuous; faces of the achenes finely striate.
Perianth 2.5–3.5 mm. long; achenes 2.5–3 mm. long, acute; leaves 2–4 cm. long. 4. *P. aviculare.*
Perianth 2–2.5 mm. long; achenes 2–2.5 mm. long, acuminate; leaves mostly less than 2 cm. long. 5. *P. neglectum.*
Plants with the upper leaves more scattered and reduced; mostly erect perennials.
Upper bracts not subulate; achenes mostly dull.
Lobes of the perianth with yellowish margins; perianth 3–4 mm. long; achenes about 3 mm. long, nearly smooth. 6. *P. ramosissimum.*
Lobes of the perianth with whitish or pinkish margins; perianth 2–3 mm. long; achenes 2–2.5 mm. long, distinctly granulate or striate.
Plant copiously branched and broom-like; leaf-blades linear or nearly so; achenes granulate. 7. *P. prolificum.*
Plant sparingly branched, mostly below; leaf-blades oblanceolate to elliptic; achenes finely striate. 8. *P. rubescens.*
Upper bracts subulate; achenes smooth and shining. 9. *P. sawatchense.*
Inflorescence aggregate at the ends of the branches, or more scattered in *P. paronychioides*, in which, however, some of the perianth-lobes are keeled near the apex; bracts leaf-like and usually broader than the narrowly linear leaves; plants dwarf annuals.
Perianth-lobes not keeled.
Leaves several, gradually merging into the bracts; achenes blunt-angled and strongly striate. 10. *P. Watsonii.*
Leaf usually solitary and much longer than the bracts; achenes sharp-angled and obscurely striate. 11. *P. unifolium.*
Some of the perianth-lobes keeled near the apex.
Bracts herbaceous or the uppermost with a very narrow scarious margin.
Bracts linear; ocreae conspicuous; inflorescence interrupted.
12. *P. paronychioides.*
Bracts oblong or narrowly oblong; ocreae inconspicuous; inflorescence contiguous and dense. 13. *P. Kelloggii.*
Bracts with broad white petaloid margins. 14. *P. polygaloides.*
Fruit reflexed.
Upper bracts much reduced and subulate.
Perianth 1.5–2.5 mm. long; leaves narrowly linear. 15. *P. Engelmannii.*
Perianth 3–5 mm. long.
Outer perianth-lobes oblong, obtusish, thickened and green or purplish on the back; lower leaves oblanceolate to linear-oblanceolate.
16. *P. Douglasii.*
Outer perianth-lobes obovate, rounded at the apex, merely with a narrow midrib; lower leaves linear.
Inflorescence long, lax, virgate; ocreae of the bracts inconspicuous.
17. *P. majus.*
Inflorescence dense, crowded at the ends of the branches; ocreae of the bracts contiguous and conspicuous. 18. *P. spergulariforme.*
Upper bracts foliaceous, relatively broad lanceolate or oblong.
Perianth 3.5–4 mm. long; lower leaves oblong or nearly so.
Achenes included. 19. *P. montanum.*
Achenes exserted. 20. *P. commixtum.*
Perianth 2–2.5 mm. long; lower leaves obovate, very acute.
21. *P. Austinae.*

10. PERSICÀRIA (C. Bauhin) Mill. Smartweed, Lady's Thumb, Water Pepper.

Racemes terminal only and usually solitary; plants aquatic perennials.
Ocreae without spreading foliaceous tops.
Plant usually floating, or decumbent and rooting; leaves of an oblong type, glabrous, acute or obtuse. 1. *P. coccinea.*

Plant usually diffuse and emersed; leaves of a lanceolate type, pubescent, acuminate. 2. *P. Muhlenbergii.*
Ocreae with spreading foliaceous tops; leaf-blades narrowly oblong or lanceolate (broader in floating forms), pubescent. 3. *P. Hartwrightii.*
Racemes axillary as well as terminal, numerous; annuals.
Ocreae without marginal bristles.
Racemes erect; glands on the branches and inflorescence numerous, stalked. 4. *P. omissa.*
Racemes drooping; glands on the branches and inflorescence sessile.
Styles united only at the base. 5. *P. incarnata.*
Styles united to about the middle.
Leaves deep green on both sides. 6. *P. lapathifolia*
Leaves pale beneath. 7. *P. incana.*
Ocreae bristle-fringed.
Racemes oblong or cylindric, about 1 cm. thick in fruit; perianth not punctate, usually pink to red-purple. 8. *P. Persicaria.*
Racemes slender, loosely flowered, about 5 mm. thick in fruit; perianth white or pale green, copiously punctate.
Racemes erect; achenes smooth and shining. 9. *P. punctata.*
Racemes nodding at least in fruit; achenes granular and dull. 10. *P. Hydropiper.*

11. **BISTÓRTA** (C. Bauhin) Mill. Bistort.

Racemes not viviparous, not bulblet-bearing, oblong, 1–2 cm. thick.
Perianth 5–6 mm. long; leaf-blades lanceolate, oblong, or oblanceolate. 1. *B. bistortoides.*
Perianth 3–4 mm. long; basal leaf-blades linear. 2. *B. linearifolia.*
Racemes viviparous, bulblet-bearing below, linear, 5–8 mm. thick. 3. *B. vivipara.*

12. **FAGOPŸRUM** (Tourn.) Mill. Buckwheat. 1. *F. Fagopyrum.*

13. **ACONÓGONUM** Reichenb. 1. *A. phytolaccaefolium.*

14. **TRACAÙLON** Raf. Tear-thumb. 1. *T. sagittatum.*

15. **BILDERDŸKIA** Dum. False Buckwheat, Bindweed.

Outer sepals merely keeled at maturity. 1. *B. Convolvulus.*
Outer sepals developing conspicuous wings. 2. *B. scandens.*

Family 38. **CHENOPODIACEAE.** Goosefoot Family.

Embryo annular.
Stems and branches not jointed; leaves not scale-like.
Flowers perfect, all with perianth, not inclosed in a pair of bracts.
Fruit inclosed in the calyx.
Calyx in fruit not transversely winged.
Sepals 3–5; stamens 1–5.
Fruiting calyx herbaceous. 1. Chenopodium.
Fruiting calyx fleshy, red. 2. Blitum.
Sepals 1; stamens 1. 3. Monolepis.
Calyx in fruit transversely winged.
Flowers paniculate; leaves ample, sinuate, flat. 4. Cycloloma.
Flowers spicate; leaves linear, terete. 5. Kochia.
Fruit laterally flattened, exserted from the marcescent calyx. 6. Coriospermum.
Flowers monoecious or dioecious; the pistillate inclosed in two accrescent bractlets.
Pericarp not hairy.
Bracts compressed; leaves more or less farinose; testa mostly coriaceous.
Pistillate flowers without perianth. 7. Atriplex.
Pistillate flowers with 2–3 hyaline sepals shorter than the bracts. 8. Endolepis.
Bracts ob-compressed; testa membranous.
Pericarp hastate with crested margins, 2-toothed apex; herbs more or less farinaceous, with toothed leaves. 9. Suckleya.
Pericarp obovate or orbicular, entire; undershrubs with entire leaves. 10. Grayia.
Pericarp densely hairy, conic; low and tomentose shrubs. 11. Eurotia.
Stems and branches fleshy, jointed; leaves scale-like; flowers sunk into the rachis of the spike.
Flower-clusters decussately opposite; branches opposite. 12. Salicornia.
Flowers spirally arranged; branches alternate. 13. Allenrolfia.
Embryo spirally coiled.
Shrubs with monoecious bractless flowers; staminate flowers in spikes, without perianth; pistillate ones solitary, axillary; fruiting calyx transversely winged. 14. Sarcobatus.
Herbs with perfect bracteolate flowers.
Fruiting calyx transversely winged; leaves spiny. 15. Salsola.
Fruiting calyx not winged; leaves fleshy, not spiny. 16. Dondia.

1. CHENOPÒDIUM (Tourn.) L. Goosefoot, Pigweed, Lamb's Quarter.

Leaves more or less mealy or glabrate, never glandular or sweet-scented, sinuately lobed dentate or entire; embryo forming a complete ring.
Stamens 5; calyx not at all fleshy in fruit.
Leaves entire or sinuately toothed, but not with large, acute (except in *C. murale*), divaricate teeth; seeds 1–1.5 mm. in diameter.
Calyx-lobes carinate; at least the upper panicles exceeding the leaves.
Pericarp easily separating from the seeds.
Leaves linear or oblong, entire or slightly sinuately toothed.
Whole plant almost perfectly glabrous; glomerules 1–4-flowered, in very lax spikes; leaves narrowly linear. 1. *C. subglabrum.*
Leaves more or less mealy beneath; glomerules several-flowered; spikes denser.
Leaves thin; inflorescence not very dense; spikes somewhat interrupted below.
Leaves all narrowly linear, 1-nerved, entire. 2. *C. leptophyllum.*
Lower leaves at least oblong or lanceolate, 3-nerved and often somewhat hastately toothed. 3. *C. pratericola.*
Leaves thick; inflorescence dense and crowded; leaves oblong.
Plant densely mealy, yellowish. 4. *C. desiccatum.*
Plant only slightly mealy, dark green. 5. *C. aridum.*
Leaves broadly ovate or triangular, more or less hastate at the base.
Plant densely farinose.
Plant low and spreading. 6. *C. incanum.*
Plant tall and erect. 7. *C. albescens.*
Plant sparingly farinose or glabrate, tall.
Leaves very thin, distinctly hastate; inflorescence lax. 8. *C. Fremontii.*
Leaves thick, only slightly hastate, rounded at the apex. 9. *C. atrovirens.*
Pericarp firmly attached to the seeds.
Leaves subentire or merely hastately toothed.
Leaves linear; calyx closed in fruit. 10. *C. inamoenus.*
Leaves broader, oblong, lanceolate, ovate or elliptic.
Calyx open in fruit; plant ill-scented. 11. *C. hians*
Calyx closed in fruit.
Leaves thick, more or less farinose, none of them cuspidate. 12. *C. Watsoni.*
Leaves thin, glabrate; inflorescence lax.
Seeds 1 mm. in diameter; upper leaves cuspidate. 13. *C. Berlandieri.*
Seeds about 1.5 mm. in diameter; upper leaves long-acuminate. 14. *C. lanceolatum.*
Leaves more or less sinuately dentate; inflorescence dense.
Leaves densely mealy. 15. *C. album.*
Leaves green or nearly so. 16. *C. paganum.*
Calyx-lobes not carinate; panicles mostly axillary, shorter than the leaves.
Leaves glabrate; seeds horizontal. 17. *C. murale.*
Leaves farinose and glaucous beneath; seeds vertical. 18. *C. salinum.*
Leaves with large divaricate acute lobes; seeds about 2 mm. in diameter. 19. *C. hybridum.*
Stamens 1–2; calyx reddish and slightly fleshy in fruit.
Plant usually more than 1 dm. high, erect; leaves usually more or less toothed. 20. *C. rubrum.*
Plant less than 2 dm. high, prostrate; leaves entire or merely hastately toothed. 21. *C. humile.*
Leaves glandular, sweet-scented, pinnately lobed; embryo horseshoe-shaped.
Lobes of the leaves rounded or broadly oblong, more or less toothed. 22. *C. Botrys.*
Lobes of the leaves lanceolate, entire. 23. *C. incisum.*

2. BLÌTUM L. Strawberry Blite, Strawberry Pigweed.

Leaves more or less dentate, truncate or broadly cuneate at the base; inflorescence dense; glomerules 5–10 mm. in diameter.
Inflorescence naked above; seeds with acute margins. 1. *B. capitatum.*
Inflorescence leafy throughout; seeds round-margined. 2. *B. virgatum.*
Leaves entire, except the hastate teeth at the cuneate base; inflorescence slender and naked above; glomerules 3–6 mm. in diameter. 3. *B. hastatum.*

3. MONÓLEPIS Schrad. Poverty Weed.

Leaves lanceolate, hastately lobed; flower-clusters several-flowered; pericarp somewhat fleshy. 1. *M. Nuttalliana.*
Leaves spatulate to linear-spatulate, entire; pericarp thin.
Flower-clusters 10–20-flowered; pericarp easily separating from the seed. 2. *M. spathulata.*
Flower-clusters 1–3-flowered; pericarp adherent to the seed. 3. *M. pusilla.*

4. CYCLOLÒMA Moq. Winged Pigweed, Tumbleweed.

1. *C. atriplicifolium.*

5. KÒCHIA Roth.

Perennial undershrubs; leaves linear-filiform, fleshy.
- Branches tomentulose, soon glabrate; leaves somewhat hairy when young; fruit nearly glabrous. 1. *K. americana.*
- Branches and leaves densely and permanently hairy; fruit very pubescent. 2. *K. vestita.*

Annual; leaves lanceolate, not fleshy. 3. *K. scoparia.*

6. CORISPÉRMUM (A. Juss.) L. Bug-seed.

Fruit with a distinct wing, about 0.5 mm. wide.
- Spike lax; lower bracts much narrower than the fruit. 1. *C. nitidum.*
- Spikes dense; lower bracts usually overtopping, and rarely narrower than the fruit. 2. *C. marginale.*

Fruit merely acute-margined, scarcely at all winged.
- Plant glabrous. 3. *C. emarginatum.*
- Plant more or less villous. 4. *C. villosum.*

7. ÁTRIPLEX (Tourn.) L. Orache, Salt-bush, Shad-scales.

Annuals.
- Bracts united only at the base; radicle inferior.
  - Bracts thin, rounded-ovate, mucronate. 1. *A. hortensis.*
  - Bracts thick, deltoid or lanceolate, acute.
    - Leaves not hastate. 2. *A. lapathifolia.*
    - Leaves more or less hastate. 3. *A. hastata.*
- Bracts united to about the middle; radicle superior.
  - Bracts lanceolate or lance-oblong, not tubercled on the back; often laciniate below. 4. *A. phyllostegia.*
  - Bracts broader; if narrow, broadest above the middle.
    - Bracts broadly cuneate, truncate at the apex, seldom with tubercles.
      - Leaves triangular or cordate-ovate.
        - Plant low, decumbent, 1 dm. high or less; leaves less than 2 cm. long. 5. *A. subdecumbens.*
        - Plant larger, 3–10 dm. high; leaves 1.5–2.5 cm. long.
          - Bracts subentire, corky at the apex; fruit short-peduncled; leaves cordate-ovate. 6. *A. saccaria.*
          - Bracts bluntly 3-toothed at the herbaceous apex; fruit subsessile; leaves more triangular-ovate. 7. *A. truncata.*
      - Leaves linear. 8. *A. Wolfii.*
    - Bracts rhombic-orbicular to triangular, conspicuously toothed on the margins and usually appendaged or tubercled on the back.
      - Bracts with linear, subulate, or oblong appendages on the back.
        - Staminate flowers few, mixed with the pistillate ones. 9. *A. Caput-Medusae.*
        - Staminate flowers in terminal clusters. 6. *A. saccaria.*
      - Bracts with triangular lobes and appendages.
        - Leaves thin, more or less toothed or hastate.
          - Bracts ovate, acute, longer than broad; branches terete or nearly so. 10. *A. rosea.*
          - Bracts suborbicular, as broad as long; branches distinctly round-angled.
            - Leaves subsessile, only the lowest with short-winged petioles, very thin, usually cuspidate-acuminate; staminate spikes, if present, elongated. 11. *A. expansa.*
            - Leaves petioled, firmer, acute; staminate spikes, if present, very short. 12. *A. argentea.*
        - Leaves ovate or oblong, entire, usually less than 2 cm. long.
          - Leaves more or less 3-ribbed; branches ascending.
            - Leaves strongly ribbed; faces of the bracts with short thick appendages. 13. *A. Powellii.*
            - Leaves obscurely ribbed; bracts without dorsal appendages. 14. *A. Rydbergii.*
          - Leaves 1-ribbed; branches spreading, slender.
            - Leaves ovate or oblong, 2–7 mm. long; bracts ovate, tubercled below the middle. 15. *A. tenuissima*
            - Leaves linear, 7–17 mm. long; bracts ovate-oblong, tubercled at or above the middle. 16. *A. Greenei.*

Perennials.
- Bracts not winged on the back.
  - Plant monoecious; lateral wings decurrent on the pedicels. 17. *A. gracilliflora.*
  - Plant dioecious; lateral wings not decurrent.
    - Bracts with entire or merely wavy (rarely slightly denticulate) margins, without appendages on the back.
      - Bracts small, 3–4 mm. long, longitudinally veined.
        - Bracts united to above the middle; shrub not spinescent. 18. *A. lentiformis.*
        - Bracts nearly free; shrub spinescent. 19. *A. Torreyi.*
      - Bracts larger, 5–10 mm. long, not veined.
        - Leaves reniform, coarsely sinuately dentate; free portion of the bracts reniform. 20. *A. hymenolytra.*
        - Leaves entire; bracts not reniform.

Leaves broadly oval or obovate; bracts obovate or suborbicular.
Bracts entire. 21. *A. confertifolia.*
Bracts dentate or denticulate, at least near the base.
22. *A. collina.*
Leaves oblanceolate; bracts lance-oblong. 23. *A. subconferta.*
Bracts with a distinctly toothed margin or appendaged on the back.
Bracts broadest above the middle.
Bracts more or less toothed on the margin, only rarely tuberculate on the back.
Bracts 3-toothed at the apex, the middle tooth the longest.
Bracts oblong-cuneate; leaves oblanceolate-cuneate.
24. *A. Gardneri.*
Bracts broadly obovate-cuneate; leaves linear.
25. *A. tridentata.*
Bracts several-toothed at the apex. 26. *A. pabularis.*
Bracts entire, spongy, strongly tuberculed or appendaged on the back.
27. *A. corrugata.*
Bracts broadest below the middle, strongly tuberculate or appendaged.
Leaves oblanceolate to spatulate.
Leaves oblanceolate, oblong, or narrowly spatulate, subsessile, or short-petioled.
Plant low; staminate flowers brown, in panicles; leaves short-petioled. 28. *A. oblanceolata.*
Plant usually tall; staminate flowers yellow, in interrupted spikes; leaves sessile.
Bracts ovate, sessile or nearly so; leaf-blades oblanceolate to oblong. 29. *A. Nuttallii.*
Bracts fusiform, stalked; leaf-blades oblong-linear to linear.
30. *A. falcata.*
Leaves broadly spatulate, conspicuously petioled; staminate flowers brown, in interrupted spikes. 31. *A. cuneata.*
Leaves oval, sessile. 32. *A. buxifolia.*
Bracts broadly 4-winged.
Leaves oval, abruptly acuminate. 33. *A. Garrettii.*
Leaves from oblong or spatulate to linear, not acuminate.
Wings thick, laciniate-toothed. 34. *A. aptera.*
Wings thin, sinuately dentate or subentire.
Wings when fully developed 4–6 mm. wide, distinctly dentate.
Leaves comparatively broad, linear-oblong to spatulate, 4–10 mm. wide; sinus at the apex of the fruit narrow; free portion of the bract one-half to three-fourths as long as the width of the wing.
35. *A. canescens.*
Leaves very narrow, linear, 2–5 mm. wide; sinus of the strongly reticulate bract broad; free portion of the bract less than half as long as the width of the wing. 36. *A. tetraptera.*
Wing very broad and thin, fully 8 mm. wide, merely sinuate; leaves linear.
37. *A. occidentalis.*

8. ENDÓLEPIS Torr.

Leaves thin, lanceolate, 1-nerved. 1. *E. Suckleyi.*
Leaves thick, ovate, or ovate-lanceolate; the lower 3-nerved. 2. *E. dioica.*

9. SUCKLÈYA A. Gray. 1. *S. Suckleyana.*

10. GRAŸIA H. & A. Hop Sage.

Plant spiny; leaves 1–3 cm. long, spatulate; bracts 8–12 mm. wide. 1. *G. spinosa.*
Plant not spiny; leaves 2.5–5 cm. long, linear-oblanceolate; bracts 4–6 mm. wide.
2. *G. Brandegei.*

11. EURÒTIA Adans. White Sage, Winter Sage, Winter Fat.

Branches erect, not spinescent; monoecious or some plants only pistillate; pubescence of mixed stellate and simple hairs. 1. *E. lanata.*
Branches ascending or spreading, becoming more or less spinescent; dioecious; pubescence of stellate hairs only. 2. *E. subspinosa.*

12. SALICÒRNIA (Tourn.) L. Glasswort, Samphire.

Annual with a taproot. 1. *S. rubra.*
Perennial with a creeping rootstock. 2. *S. utahensis.*

13. ALLENRÓLFIA Kuntze. Burro Weed. 1. *A. occidentalis.*

14. SARCOBÀTUS Nees. Greasewood, Chico. 1. *S. vermiculatus.*

15. SÁLSOLA L. Saltwort, Russian Thistle. 1. *S. Pestifer.*

16. DÓNDIA Adans. Sea Blite.

Sepals more or less fleshy, but none of them carinate; leaves narrowed at the base.
Plant perennial, stout.

Seeds tubercled. 1. *D. Torreyana.*
Seeds not tubercled. 2. *D. intermedia.*
Plant annual, more slender. 3. *D. nigra.*
Sepals very fleshy, one or two decidedly carinate.
Leaves subulate, broadest at the base; flowers crowded.
Plant depressed, spreading. 4. *D. depressa.*
Plant erect, strict. 5. *D. erecta.*
Leaves narrowed at the base; spike slender; flowers not crowded. 6. *D. occidentalis.*

Family 39. **AMARANTHACEAE.** Amaranth Family.

Anthers 2-celled; green plants with alternate leaves.
Perianth present in all flowers. 1. Amaranthus.
Perianth wanting in the pistillate flowers. 2. Acnida.
Anthers 1-celled; stellate or woolly plants with mostly opposite leaves.
Filaments united into a short cup at the base; calyx neither crested nor spiny; plants stellate, diffuse. 3. Tidestromia.
Filaments united into a long tube; calyx crested and tuberculate or spiny at maturity; plants woolly, erect. 4. Froelichia.

1. **AMARÁNTHUS** (Tourn.) L. Amaranth, Pigweed, Tumbleweed.

Sepals clawed; flowers in terminal and axillary spikes.
Monoecious; sepals fimbriate; utricle circumscissile; leaf-blades linear or lanceolate. 1. *A. fimbriatus.*
Dioecious; sepals not fimbriate; utricle indehiscent; leaf-blades lanceolate-ovate or obovate.
Bracts lanceolate, not exceeding the flowers; spike not very long. 2. *A. Torreyi.*
Bracts subulate, pungent, exceeding the flowers; spikes very long. 3. *A. Palmeri.*
Sepals not clawed.
Plants tall, simple; flowers in terminal and axillary panicles; sepals 5.
Stamens 3; sepals 1–2 mm. long; bracts 5 mm. long or more. 4. *A. Powellii.*
Stamens 5; sepals 2–3 mm. long; bracts 3–5 mm. long.
Spikes stout, 8–14 mm. thick, strict; pistillate sepals obtuse or truncate.
Inflorescence tinged with red; pistillate sepals 1.5–2 mm. long; plant glabrous. 5. *A. Wrightii.*
Inflorescence pale green; pistillate sepals 3 mm. long; plant villous. 6. *A. retroflexus.*
Spike slender, 4–6 mm. thick, usually drooping; stem glabrous; pistillate sepals acute. 7. *A. hybridus.*
Plant low, much branched; flowers in small axillary spike-like panicles, shorter than the leaves.
Sepals 3–5, well developed.
Sepals 4–5; bracts lanceolate, a little longer than the sepals; plant prostrate. 8. *A. bliloides.*
Sepals 3; bracts much longer than the sepals, pungent.
Plant erect, glabrous. 9. *A. graecizans.*
Plant prostrate or diffuse, pubescent. 10. *A. pubescens.*
Sepals of the pistillate flowers, all except one, minute or wanting. 11. *A. californicus.*

2. **ACNÌDA** L. Water-hemp.

Pistillate inflorescence of slender interrupted spikes; fruit circumscissile. 1. *A. tamariscina.*
Pistillate inflorescence of closely clustered spikes; fruit indehiscent or irregularly splitting. 2. *A. altissima.*

3. **TIDESTRÒMIA** Standl. 1. *T. lanuginosa.*

4. **FROELÍCHIA** Moench.

Stout, 4–12 dm. tall; crest of fruiting calyx continuous, dentate. 1. *F. campestris.*
Slender, 2–5 dm. high; crest of fruiting calyx interrupted, forming distinct spines. 2. *F. gracilis.*

Family 40. **NYCTAGINACEAE.** Four-o'clock Family.

Bracts distinct.
Fruit crested or winged; bracts in a whorl at the base of the head-like cluster; perianth salverform.
Bracts conspicuous.
Wings not completely encircling the fruit, interrupted above and below. 1. Abronia.
Wings completely encircling the fruit. 2. Tripterocalyx.
Bracts inconspicuous or lacking. 3. Selinocarpus.
Fruit globular, neither crested nor winged; bracts attached each to a pedicel of the umbel-like or corymbose inflorescence; perianth funnelform. 4. Hermidium.
Bracts united.
Fruit neither strongly tubercled nor winged.

Fruit not ribbed; involucre herbaceous, little if at all enlarging in fruit, not becoming membranous.
Stamens usually 5; involucre campanulate, not enlarged in fruit.
Flowers several in each involucre. 5. QUAMOCLIDION.
Flowers solitary in each involucre. 6. HESPERONIA.
Stamens 3; involucre rotate, somewhat enlarged in fruit in the manner of the next genus, but not membranous. 7. ALLIONIELLA.
Fruit ribbed; involucre rotate, in fruit becoming much enlarged and membranous. 8. ALLIONIA.
Fruit with two rows of strong tubercles on the back and surrounded by two-toothed inflexed wings. 9. WEDELIELLA.

1. **ABRÒNIA** Juss. SAND VERBENA, SAND PUFFS.

Fruit biturbinate, *i. e.*, tapering at both ends, irregularly ridged or crested.
Flowers about 2 cm. long; limb 5–10 mm. wide.
Bracts broadly obovate, over 1 cm. long. 1. *A. fragrans.*
Bracts ovate-lanceolate, less than 1 cm. long. 2. *A. nudata.*
Flowers about 1 cm. long; limb 3–5 mm. wide; bracts ovate to lanceolate-ovate, 5–8 mm. long.
Petioles of the stem-leaves shorter than the very thick blades; plant low, about 1 dm. high. 3. *A. pumila.*
Petioles of the stem-leaves much longer than the moderately thick blades; plant slender, 2–4 dm. high. 4. *A. ammophila.*
Fruit turbinate or obpyramidal, *i. e.*, almost truncate above, distinctly winged, the wings very broad above.
Plant almost acaulescent; stem and leaves greatly surpassed by the long peduncles. 5. *A. nana.*
Plant with an elongated stem.
Bracts broadly ovate or obovate, acute or obtusish.
Stem distinctly viscid-pubescent; leaves scabrous-puberulent; bracts 1–1.5 cm. long.
Blades of the stem-leaves elliptic; bracts broadly obovate, 12–15 mm. wide, obtusish. 6. *A. salsa.*
Blades of the stem-leaves lanceolate; bracts oval, acute, about 6–7 mm. wide. 7. *A. fallax.*
Stem finely puberulent or glabrous; leaves glabrous; bracts 5–8 mm. long.
Stem puberulent; leaves long-petioled; bracts 8–15 mm. long. 8. *A. elliptica.*
Stem glabrous; leaves short-petioled; bracts 5 mm. long. 9. *A. glabra.*
Bracts oblong-lanceolate or lanceolate, attenuate or cuspidate.
Stem glabrous. 10. *A. lanceolata.*
Stem more or less pubescent.
Stem puberulent; wings with double lamina, coriaceous. 11. *A. Carletoni.*
Stem villous; wings with single lamina, membranous. 12. *A. villosa.*

2. **TRIPTEROCÀLYX** Hook. SAND PUFFS.

Flowers 3 cm. or more long; limb about 1 cm. wide; peduncles longer than the leaves. 1. *T. cyclopterus.*
Flowers 1.5–2 cm. long; limb about 5 mm. wide.
Stem glabrous or nearly so; peduncles often nearly equalling the leaves. 2. *T. pedunculatus.*
Stem densely pubescent; peduncles at least in flower much shorter than the leaves. 3. *T. micranthus.*

3. **SELINOCÀRPUS** A. Gray. 1. *S. diffusus.*

4. **HERMÍDIUM** S. Wats. 1. *H. alipes.*

5. **QUAMOCLÍDION** Choisy. FOUR-O'CLOCK. 1. *Q. multiflorum.*

6. **HESPERÒNIA** Standl. 1. *H. limosa.*

7. **ALLIONIÉLLA** Rydb. 1. *A. oxybaphoides.*

8. **ALLIÒNIA** Loefl. UMBRELLA-WORT.

Leaves cordate to broadly ovate-lanceolate, all distinctly petioled.
Leaf-blades cordate or deltoid. 1. *A. nyctaginea.*
Leaf-blades ovate, rounded or cuneate at the base.
Stem glabrous; leaves thin and soft; inflorescence not bracteate. 2. *A. floribunda.*
Stem hirsute; leaves thick and fleshy; inflorescence bracteate. 3. *A. polyatricha.*
Leaves ovate-lanceolate, oblong, or linear, sessile, or only the lower short-petioled.
Stem more or less hirsute as well as viscid.
Fruit pubescent.
Leaves ovate or broadly oblong, as well as the stem conspicuously hirsute. 4. *A. hirsuta.*
Leaves linear-lanceolate, almost glabrous; stem sparingly hirsute, or glabrous except under the nodes. 5. *A. pilosa.*
Fruit glabrous. 6. *A. Carletoni.*
Stem glabrous below, not hirsute, viscid-puberulent above.

Flowers solitary in the involucre, on short slender pedicels; fruit nearly glabrous. 7. *A. glabra.*
Flowers 2–3 in the involucres, subsessile; fruit decidedly pubescent.
Lower leaves ovate, rounded at the base. 8. *A. sessilifolia.*
Lower leaves lanceolate to linear, tapering at the base.
Leaves of the cymes much reduced and bract-like; upper portion of the stem densely and finely puberulent. 9. *A. bracteata.*
Leaves of the cymes neither much reduced nor bract-like.
Leaves erect or ascending; lobes of the involucre rounded or broadly triangular-ovate.
Plant prostrate or diffuse; involucres and branches of the inflorescence densely viscid-hairy. 10. *A. diffusa.*
Plants more simple, erect or ascending; branches of the inflorescence usually merely viscid-puberulent.
Leaves from ovate- or obovate- to linear-lanceolate, usually over 5 mm. wide. 11. *A. decumbens.*
Leaves narrowly linear, less than 5 mm. wide. 12. *A. linearis.*
Leaves divergent, distinctly petioled; lobes of the involucre elliptic or oval. 13. *A. divaricata.*

9. WEDELIÉLLA Cockerell. 1. *W. incarnata.*

Family 41. TETRAGONIACEAE. Carpet-weed Family.

Hypanthium wanting; capsule loculicidal; leaves whorled. 1. Mollugo.
Hypanthium manifest; capsule circumscissile; leaves opposite. 2. Sesuvium.

1. MOLLÙGO L. Indian Chickweed, Carpet-weed. 1. *M. verticillata.*

2. SESÙVIUM L. Sea Purslane. 1. *S. sessile.*

Family 42. PORTULACACEAE. Purslane Family.

Ovary wholly superior.
Styles or stigmas 3–8; sepals not accrescent; inflorescence not secund.
Sepals deciduous, scarious; capsule 3-valved; plant with fleshy rootstock or root; ours with terete leaves. 1. Talinum.
Sepals persistent, at least in part herbaceous.
Capsule 3-valved; styles 3.
Plants with a corm, or a fleshy root, crowned with a short caudex; cauline leaves opposite; ovules usually 6. 2. Claytonia.
Plants annual, or perennial, with slender rootstocks; ovules usually 3.
Stem-leaves opposite.
Stem-leaves a single pair; plant neither rooting at the nodes nor flagelliferous. 3. Limnia.
Stem-leaves of several pairs; plant floating and rooting at the nodes, usually flagelliferous. 4. Crunocallis.
Stem-leaves alternate.
Leaves very fleshy; perennials, with bulblets and creeping stems or stolons. 5. Naiocrene.
Leaves not fleshy; erect annuals, without bulblets and stolons. 6. Montiastrum.
Capsule circumscissile near the base.
Sepals 6–8; scape jointed above the middle, with 2 or more subulate bracts at the joint. 7. Lewisia.
Sepals 2; scape not jointed near the middle.
Plants with a thick perennial root, bearing one or several short caudices. 8. Oreobroma.
Plants with a globular corm and a slender stem bearing 2–3 verticillate leaves. 9. Erocallis.
Styles or stigmas 2; capsule 2-valved; sepals scarious and accrescent; inflorescence secund. 10. Spraguea.
Ovary partly inferior, circumscissile; ours low spreading leafy annuals, with flat leaves. 11. Portulaca.

1. TALÌNUM Adans. Fame-flower.

Plant scapose, from a corm-like rootstock.
Flowers about 1 cm. wide; stamens 5–10. 1. *T. parviflorum.*
Flowers 2–3 cm. wide; stamens 30 or more. 2. *T. calycinum.*
Plant low and spreading, from a branched rootstock; flowers axillary. 3. *T. brachypodum.*

2. CLAYTÒNIA (Gronov.) L. Spring Beauty, Ground-nut.

Plants with corms; basal leaves few.
Stem-leaves linear or narrowly lanceolate, 1-ribbed or indistinctly 3-ribbed.
Corolla orange. 1. *C. chrysantha.*
Corolla white or pink.
Sepals oblong to oval, rounded at the apex; corms usually with 1 or 2 stems.
Stem-leaves petioled; corolla white, with rose-colored veins. 2. *C. virginica.*

Stem-leaves sessile; flowers pink. 3. *C. rosea.*
Sepals rhombic-ovate; corms with several stems. 4. *C. multiscapa.*
Stem-leaves broadly lanceolate, distinctly triple-ribbed. 5. *C. lanceolata.*
Plants with a short caudex and a fleshy taproot; basal leaves clustered. 6. *C. megarrhiza.*

3. LÍMNIA L. Spanish Lettuce, Squaw Lettuce, Squaw Cabbage, Miners' Lettuce.

Plants with perennial scaly rootstocks; stem-leaves not united. 1. *L. asarifolia.*
Plants annual, or perennial by offsets.
Stem-leaves free; bractlets present.
Stem-leaves rounded or rhombic-ovate. 2. *L. sibirica.*
Stem-leaves linear. 3. *L. arenicola.*
Stem-leaves more or less united; bractlets lacking, or only one below the lowest pedicel.
Stem-leaves broadly ovate to orbicular.
Blades of the basal leaves reniform or rhombic to spatulate.
Racemes elongate; flowers more or less fascicled; seeds about 2 mm. long. 4. *L. perfoliata.*
Racemes short, only slightly exceeding the subtending leaves; seeds about 1 mm. long. 5. *L. depressa.*
Blades of the basal leaves linear to spatulate; seeds 1 mm. long or less.
Racemes elongate. 6. *L. parviflora.*
Racemes very short.
Stem-leaves 1–2 cm. long; seeds minutely muricate. 7. *L. utahensis.*
Stem-leaves less than 1 cm. long; seeds conspicuously granulated. 8. *L. spathulata.*
Stem-leaves linear. 9. *L. exigua.*

4. CRUNOCÁLLIS Rydb. Water Spring-Beauty. 1. *C. Chamissonis.*

5. NAIOCRÈNE (T. & G.) Rydb. 1. *N. parvifolia.*

6. MONTIÁSTRUM (A. Gray) Rydb. 1. *M. lineare.*

7. LEWÍSIA Pursh. Bitter-root, Red-head Louisa. 1. *L. redeviva.*

8. OREOBRÒMA Howell. Bread-root.

Bracts neither sepal-like nor closely subtending the calyx.
Sepals not erose-denticulate.
Petals 10–12 mm. long; leaves usually more than 2 mm. wide. 1. *O. nevadensis.*
Petals less than 10 mm. long; leaves 2 mm. wide or less. 2. *O. minima.*
Sepals erose-denticulate. 3. *O. pygmaea.*
Bracts 2, sepal-like and closely subtending the calyx. 4. *O. brachycalyx.*

9. EROCÁLLIS Rydb. 1. *E. triphylla.*

10. SPRÀGUEA Torr. Pussy-paws. 1. *S. multiceps.*

11. PORTULÀCA (Tourn.) L. Purslane, Pussley.

Leaf-blades flat, glabrous in the axils or nearly so; petals yellow.
Stem prostrate; sepals pointed in the bud; seeds obscurely granulate. 1. *P. oleracea.*
Stem ascending; sepals obtuse in the bud; seeds echinate-tuberculate. 2. *P. retusa.*
Leaf-blades terete or nearly so, pilose in the axils; petals red or purple. 3. *P. pilosa.*

Family 43. **CORRIGIOLACEAE.** Whitlow-wort Family.

1. PARONÝCHIA (Tourn.) Adans. Whitlow-wort.

Flowers solitary; leaves scarcely exceeding the bracts; plants densely pulvinate.
Leaves elliptic, thick, not spinulose-tipped. 1. *P. pulvinata.*
Leaves linear, chartaceous, spinulose-tipped.
Leaves straight, ascending; spinules of the sepals less than 1 mm. long. 2. *P. brevicuspis*
Leaves arcuate-spreading; spinules of the sepals more than 1 mm. long. 3. *P. sessiliflora.*
Flowers more or less clustered; leaves much longer than the bracts.
Plants low and diffuse, less than 1 dm. high; calyx fully 3 mm. long.
Inflorescence much contracted; bracts exceeding the flowers. 4. *P. depressa.*
Inflorescence more open; bracts shorter than or merely equalling the flowers. 5. *P. diffusa.*
Plants taller, 1 dm. or more high; stems erect or ascending; calyx 2–2.5 mm. long.
Branches of the cymes ascending; calyx about 2.5 mm. long; sepals lanceolate, gradually acuminate. 6. *P. Jamesii.*
Branches of the cymes divaricate; calyx about 2 mm. long; sepals oblong, abruptly acuminate. 7. *P. Wardii.*

Family 44. **ALSINACEAE.** Chickweed Family.

Stipules wanting.
Capsule opening with twice as many valves or teeth as there are styles; petals deeply 2-cleft.

Capsule short, ovate or oblong, opening with usually 6 valves; styles usually 3. 1. ALSINE.
Capsule long, cylindric, often curved, opening with usually 10 teeth at the apex; styles usually 5. 2. CERASTIUM.
Capsule opening with as many, entire or at length 2-cleft, valves as there are styles; petals entire or merely notched at the apex (except in *Arenaria Kingii*).
Styles fewer than the sepals, or rarely of the same number and then opposite them.
Flowers with a rather prominent, glandular, 10-lobed disk under the ovary; plants fleshy. 3. AMMODENIA.
Flowers with no or a very inconspicuous disk; plants scarcely fleshy.
Seeds with a basal membranous appendage (strophiole) at the hylum. 4. MOEHRINGIA.
Seeds not strophiolate.
Valves of the capsule entire. 5. ALSINOPSIS.
Valves of the capsule at last 2-cleft. 6. ARENARIA.
Styles as many as the sepals and alternate with them. 7. SAGINA.
Stipules present.
Leaves whorled; styles 5. 8. SPERGULA.
Leaves opposite; styles usually 3.
Styles distinct; sepals not spinulose-tipped. 9. TISSA.
Stigmas sessile; sepals spinulose-tipped. 10. LOEFLINGIA.

1. ALSÌNE L. CHICKWEED, STARWORT.

Plant not viscid.
Basal leaf-blades spatulate to rhombic-obovate, petioled; plants annual.
Leaf-blades all ovate or rhombic-ovate.
Flowers cymose. 1. *A media*
Flowers solitary in the axils. 18. *A. washingtoniana*.
Stem-leaves small, lanceolate. 2. *A. nitens*.
All leaves sessile.
Upper bracts at least scarious; perennials with rootstocks.
Petals minute or none.
Leaves oblong-lanceolate; branches of the inflorescence at last reflexed. 3. *A. baicalensis*.
Leaves linear; branches of the inflorescence ascending. 4. *A. alpestris*.
Petals equalling or exceeding the sepals.
Leaves broadest at about the middle, narrowed at the base. 5. *A. longifolia*.
Leaves broadest near the base.
Calyx 4–5 mm. long; stem not villous.
Stem 2–3 dm. high, many-flowered; leaves narrowly lanceolate to nearly linear.
Sepals lanceolate, very acute, nearly equalling the capsule. 6. *A. strictiflora*.
Sepals ovate or ovate-lanceolate, obtuse or mucronate, scarcely more than half as long as the mature capsule; pedicels in fruit spreading. 7. *A. longipes*.
Stem 3–15 cm. high, usually 1–3-flowered, rarely 4–6-flowered.
Leaves narrowly lanceolate; sepals lanceolate, very acute. 8. *A. laeta*.
Leaves ovate or ovate-lanceolate; sepals ovate-lanceolate, obtusish. 9. *A. Edwardsii*.
Calyx 2–3 mm. long; stem 1 dm. high or less, 3–10-flowered, usually villous. 10. *A. subvestita*.
None of the bracts scarious.
Leaves linear to lanceolate, more than four times as long as broad; plants perennial, with running rootstocks.
Petals equalling or exceeding the sepals.
Plant low, less than 1 dm. high, bluish green. 8. *A. laeta*.
Plant slender, light green, more than 1 dm. high. 11. *A. crassifolia*.
Petals much shorter than the sepals, or none.
Sepals with narrow scarious margins, acute; leaves oblong-lanceolate, narrowed at the base; midrib not unusually strong; petals usually lacking. 12. *A. borealis*.
Sepals with broad scarious margins, acuminate; leaves linear-lanceolate, with a strong midrib; petals usually present.
Leaves 2–8 mm. wide, broadest near the base. 13. *A. brachypetala*.
Leaves 8–15 mm. wide, broadest near the middle. 14. *A. oxyphylla*.
Leaves ovate-lanceolate, ovate or oval, less than four times as long as broad; cespitose perennials, except No. 18.
Leaves thin.
Stem glabrous or nearly so.
Sepals acute or acuminate. 15. *A. crispa*.
Sepals obtuse. 16. *A. obtusa*.
Stem distinctly pubescent.
Leaves sessile; flowers more or less cymose. 17. *A. calycantha*.

Leaves short-petioled; flowers solitary in the axils. 18. *A. washingtoniana.*
Leaves thick.
Petals equalling or exceeding the sepals; branches simple, ascending.
Leaves ovate, bluish green, with strong midrib; petals longer than the obtusish sepals. 9. *A. Edwardsii.*
Leaves oval, bright green; midrib not strong; petals equalling the acute sepals. 19. *A. Palmeri.*
Petals shorter than the sepals; branches divaricately branched, spreading. 20. *A. polygonoides.*
Plant more or less viscid, especially the upper portion; perennials with rootstocks.
Plant tall, 1–3 dm. high, erect; leaves linear to lanceolate.
Leaves linear or linear-lanceolate, 2–5 mm. wide. 21. *A. Curtisii.*
Leaves lanceolate, 5–10 mm. wide. 22. *A. Jamesiana.*
Plant low, diffusely cespitose; leaves ovate. 23. *A. americana.*

2. CERÁSTIUM L. Mouse-ear Chickweed.

Annuals; pod 2–3 times as long as the calyx.
Pedicels in fruit 1–3 times as long as the calyx, straight or nearly so. 1. *C. brachypodum.*
Pedicels in fruit 5 times as long as the calyx or longer; strongly curved above. 2. *C. nutans.*
Perennials or rarely annuals; pods 1–2 times as long as the calyx.
Leaves oblong, oval, or ovate, mostly obtuse, or barely acutish.
Petals 1 cm. long or more, fully twice as long as the sepals.
Sepals, at least the outer ones, oval, obtuse, scarious-margined at the tip as well as on the sides. 3. *P. pulchellum.*
Sepals lanceolate, acute, scarious mostly on the margins only.
Leaves and stem distinctly, although not copiously villous. 4. *C. alpinum.*
Leaves and stem finely pilose. 5. *C. Earlei.*
Petals less than 1 cm. long.
Petals much exceeding the sepals.
Leaves thick with a prominent midrib.
Plant tall, 4–5 dm. high; leaves linear-oblong. 12. *C. Leibergii.*
Plant low, depressed, less than 1 dm. high; leaves ovate-lanceolate. 18. *C. thermale.*
Leaves thin; midrib not prominent.
Sepals tinged with purple; stem depressed, 1–3-flowered. 6. *C. Beeringianum.*
Sepals light green; plant not depressed, 3–12-flowered. 7. *C. variabile.*
Petals scarcely if at all exceeding the sepals; branches erect or ascending.
Plant low and cespitose; leaves rather thick, all subsessile. 8. *C. Buffumae.*
Plant taller and simple; leaves thin, the lower spatulate and with winged petioles. 9. *C. vulgatum.*
Leaves, at least the lower ones, linear or linear-lanceolate, acute.
Leaves of the inflorescence short, broadly ovate, the rest linear. 10. *C. oreophilum.*
Leaves all linear or lanceolate, or rarely linear-oblong.
Inflorescence racemose-cymose, with almost erect branches, as well as the calyx copiously viscid. 11. *C. elongatum.*
Inflorescence cymose, with ascending or spreading branches.
Lower leaves linear-oblong, 5–8 mm. wide; often obtuse. 12. *C. Leibergii.*
Leaves linear or linear-lanceolate, usually less than 5 mm. wide, all acute or acuminate.
Petals 12–14 mm. long, more than twice as long as the sepals. 13. *C. graminifolium.*
Petals 10 mm. long or less, rarely twice as long as the sepals.
Stem villous with reflexed hairs.
Leaves thin and flaccid, those of the sterile shoots and fascicles much narrower than those of the main stem. 14. *C. angustatum.*
Leaves firm, with a thick midrib, all alike or those of the sterile shoots broader. 15. *C. campestre.*
Stem finely glandular-puberulent.
Leaves thin and soft, all linear or narrowly linear-lanceolate; midrib not prominent. 16. *C. scopulorum.*
Leaves thick and firm; midrib prominent.
Stem 1 dm. high or more; plant green; leaves not coriaceous, acute. 17. *C. strictum.*
Stem depressed, less than 1 dm. high; plant yellowish green; leaves coriaceous, the lower often obtuse. 18. *C. thermale.*

3. AMMODÈNIA J. G. Gmel. 1. *A. oblongifolia.*

4. MOEHRÍNGIA L.

Stem terete; leaves oval or elliptic-oblong; sepals obtuse or acutish. 1. *M. lateriflora.*

Stem angled; leaves lanceolate or oblanceolate; sepals very acute or acuminate. 2. *M. macrophylla.*

5. ALSINÓPSIS Small. SANDWORT.

Annuals.
Plant puberulent above; petals exceeding the sepals. 1. *A. tenella.*
Plant glabrous; petals scarcely equalling the sepals. 2. *A. dawsonensis.*
Cespitose perennials.
Sepals acute or acuminate.
Leaves pungent, arcuate-spreading; sepals 1-nerved or indistinctly 3-nerved. 3. *A. occidentalis.*
Leaves not pungent; sepals distinctly 3-nerved.
Petals 6–8 mm. long, much exceeding the sepals. 4. *A. macrantha.*
Petals small, scarcely equalling the sepals.
Plant densely glandular-puberulent. 5. *A. propinqua.*
Plant glabrous or nearly so.
Leaves 3-nerved, acutish, flat.
Leaves linear-subulate, usually over 1 cm. long; plant cespitose, but not densely tufted, 3–10 cm. high. 6. *A. verna.*
Leaves linear-lanceolate, less than 1 cm. long; plant densely tufted, about 2 cm. high. 7. *A. quadrivalvis.*
Leaves usually 1-nerved, obtuse, more or less triangular in cross-section, fleshy. 8. *A. Rossii.*
Sepals obtuse.
Petals equalling or somewhat exceeding the sepals; plant 1–5 cm. high. 9. *A. obtusiloba.*
Petals twice as long as the sepals; plant about 1 dm. high. 10. *A. laricifolia.*

6. ARENÀRIA L. SANDWORT.

Annuals; leaves ovate, 4–7 mm. long. 1. *A. serpyllifolia.*
Perennials.
Leaves neither narrowly linear nor pungent.
Plant low and spreading; stems less than 1 dm. long; leaves ovate-oblong, less than 1 cm. long.
Sepals obtuse or acute; midrib not very prominent; leaves glabrous. 2. *A. cylindrocarpa.*
Sepals acuminate; midrib very prominent; leaves puberulent. 3. *A. polycaulos.*
Plant taller; stems 2–4 dm. long; leaves oblong or linear-oblong, more than 1 cm. long. 4. *A. confusa.*
Leaves narrowly linear, more or less rigid and pungent.
Sepals ovate or ovate-lanceolate.
Inflorescence contracted and head-like.
Bracts ovate, not scabrous-ciliolate, only scarious-margined. 5. *A. congesta.*
Bracts narrowly lanceolate, scabrous-ciliolate, wholly scarious, except the midrib. 6. *A. cephaloidea.*
Inflorescence more open.
Sepals obtuse, or some acutish, or apiculate.
Plant glabrous.
Bracts linear-lanceolate, scarcely scarious-margined. 8. *A. nardifolia.*
Bracts ovate-lanceolate or ovate, broadly scarious-margined, with green midrib. 9. *A. lithophila.*
Plant more or less glandular.
Sepals 4–5 mm. long; petals about twice as long as the sepals. 10. *A. formosa.*
Sepals 2–3 mm. long; petals half longer than the sepals. 11. *A. salmonensis.*
Sepals distinctly acute or acuminate.
Petals deeply 2-cleft. 12. *A. Kingii.*
Petals not deeply 2-cleft.
Plant with a cespitose perennial caudex; all bracts usually broadly lanceolate and broadly scarious-margined.
Capsule scarcely exceeding the sepals; leaves ascending.
Flowers all pedicelled, in open regular cymes; inflorescence more or less glandular.
Leaves distinctly pungent; plant sparingly glandular-puberulent.
Sepals 4–5 mm. long; plant not densely tufted. 13. *A. uintahensis.*
Sepals 3 mm. long; plant low, densely tufted. 14. *A. compacta.*
Leaves more fleshy, not pungent; inflorescence and calyx densely glandular-pubescent. 15. *A. Tweedyi.*
Flowers mostly subsessile, in small glomerules at the ends of the branches of the very irregular cymes. 16. *A. Burkei.*
Capsule almost twice as long as the sepals; leaves spreading. 17. *A. aculeata.*
Plant suffrutescent, the perennial portion of the stems often 1–2 dm. high; lower bracts subulate, only the upper scarious. 18. *A. glabrescens.*

Sepals narrowly lanceolate, acuminate.
Cymes open, not densely congested.
Plant more or less glandular.
Branches of the inflorescence long and ascending-spreading; sepals equalling or exceeding the petals. 19. *A. laxiflora.*
Branches of the inflorescence comparatively short and strongly ascending; sepals usually shorter than the petals. 20. *A. Fendleri.*
Plant perfectly glabrous. 21. *A. Eastwoodiae.*
Cymes densely congested, subcapitate.
Caudex of numerous procumbent branches covered with dried leaves; sepals long-acuminate, longer than the petals. 22. *A. Franklinii.*
Caudex multicipital; sepals short-acuminate, shorter than the petals. 23. *A. Hookeri.*

7. SAGÌNA L. Pearlwort.

Stem short, forming sterile rosettes at the base; perennials.
Basal leaves filiform; petals shorter than the green sepals. 1. *S. saginoides.*
Basal leaves subulate; petals longer than the purple-tinged sepals. 2. *S. nivalis.*
Stem slender, 5–10 cm. high, without sterile rosettes at the base; annuals. 3. *S. occidentalis.*

8. SPÉRGULA L. Spurry, Corn Spurry. 1. *S. arvensis.*

9. TÍSSA Adans. Sand Spurry.

Stipules lanceolate or ovate-lanceolate, longer than broad. 1. *T. rubra.*
Stipules broadly triangular, as broad as long or broader.
Stipules triangular, about as long as broad; internodes of the stem much shorter than the leaves; seeds rough. 2. *T. salina.*
Stipules very broadly triangular, almost twice as broad as long; middle internodes about equalling the nodes; seeds smooth. 3. *T. sparsiflora.*

10. LOEFLÍNGIA L. 1. *L. texana.*

Family 45. CARYOPHYLLACEAE. Pink Family.

Calyx with at least twice as many ribs (usually 10) as calyx-teeth, running both into the teeth and the sinuses.
Styles 5, alternate with the foliaceous calyx-lobes. 1. Agrostemma.
Styles either 5 and opposite the short calyx-lobes or fewer than 5.
Styles mostly 3; capsule usually septate at the base. 2. Silene.
Styles 5; capsule 1-celled to the base. 3. Wahlbergella.
Calyx 5-angled or 5-ribbed.
Petals with a crown; calyx not strongly angled. 4. Saponaria.
Petals without a crown; calyx strongly 5-angled. 5. Vaccaria.

1. AGROSTÉMMA L. Corn Cockle, Corn Campion. 1. *A. Githago.*

2. SILÈNE L. Catchfly, Campion.

Annuals.
Glabrous or nearly so, or the upper nodes glutinous. 1. *S. antirrhina.*
Viscid-pubescent or hirsute throughout. 2. *S. noctiflora.*
Perennials.
Calyx mostly 10-nerved, rarely strongly inflated in fruit, not constricted at the mouth.
Caulescent herbs, rather tall, not densely matted, with rootstocks.
Inflorescence paniculate or thyrsoid at the end of the stem, not leafy; flowers more than 1 cm. long.
Blade of the petals 2-parted and cleft into 4–6 linear segments. 3. *S. oregana.*
Blades of the petals bifid; each lobe sometimes with a lateral tooth.
Blade small, scarcely exceeding the small appendages; plant viscid-tomentose. 4. *S. Spaldingii.*
Blades conspicuous, much longer than the appendages; plant viscid-puberulent or glabrous.
Stipe of the capsule over 5 mm. long; fruiting calyx distinctly contracted below. 5. *S. repens.*
Stipe of the capsule short, less than 5 mm. long; calyx slightly if at all contracted below.
Plants comparatively few-flowered; inflorescence not verticillately racemose or spicate; branches mostly ascending and bracts shorter than the calyx.
Stem nearly glabrous; flowers solitary or 3–5 in an open cyme; leaves grass-like. 6. *S. monantha.*
Stem puberulent throughout or viscid above; leaves not grass-like.
Calyx short, its lobes rounded, with dilated scarious margins. 7. *S. columbiana.*
Calyx long, its lobes ovate; margins scarcely dilated.
Calyx inflated in fruit, purple-veined; stem viscid above.

Plant very viscid; leaves thick, the basal ones narrowly linear-oblanceolate; calyx less inflated. 8. *S. Lyallii.*
Plant usually viscid only above; leaves thin, the basal ones oblanceolate or spatulate; calyx much inflated and rounded below. 9. *S. multicaulis.*
Calyx scarcely inflated in fruit, narrowed downward; veins green; plant not viscid. 10. *S. Douglasii.*
Plants many-flowered, more or less verticillately racemose or spicate, with erect branches; lower bracts longer than the calyx.
Claw and auricles of the petals narrow; the latter laciniate. 11. *S. Scouleri.*
Claw and auricles of the petals broad; the latter ciliate. 12. *S. Hallii.*
Inflorescence leafy; flowers borne in the axils of the branches, less than 1 cm. long. 13. *S. Menziesii.*
Plant subacaulescent, densely cespitose-pulvinate. 14. *S. acaulis.*
Calyx 15–20-nerved, strongly inflated in fruit and more or less constricted at the mouth. 15. *S. vulgaris.*

3. WAHLBERGÉLLA Fries.

Tall, usually 3 dm. high or more, several to many-flowered, in narrow cymes.
Petals included. 1. *W. Drummondii.*
Petals exserted.
Ovary sessile; blades of the petals emarginate. 2. *W. striata.*
Ovary stipitate; blades of the petals 2-cleft. 3. *W. Parryi.*
Low, about 1 dm. high; flowers solitary, or 2 or 3; seeds winged.
Flowers in anthesis erect; fruiting calyx not much inflated.
Petals usually exserted; claw broad; blade short and broad, emarginate.
Claws of the petals and the filaments naked; plant glandular-villous. 4. *W. affinis.*
Claws of the petals and the filaments ciliate; plant puberulent. 5. *W. Kingii.*
Petals usually included; claws and blades narrow; the latter bifid; filaments glabrous. 6. *W. montana.*
Flowers in anthesis nodding; fruiting calyx much inflated.
Petals slightly exserted; calyx-lobes broadly lanceolate; five of the stamens adnate to the petals for one-third their length. 7. *W. attenuata.*
Petals included; calyx-lobes short, rounded-ovate; five of the stamens only slightly adnate to the petals at the base. 8. *W. apetala.*

4. SAPONÀRIA L. Soapwort, Bouncing Bet. 1. *S. officinalis.*

5. VACCÀRIA Medic. Cow-herb, Cow Cockle. 1. *V. Vaccaria.*

Family 46. CERATOPHYLLACEAE. Hornwort Family.

1. CERATOPHÝLLUM L. Hornwort. 1. *C. demersum.*

Family 47. NYMPHAEACEAE. Water Lily Family.

Petals small, staminodia-like; stamens hypogynous. 1. Nymphaea.
Petals at least as large as th sepals; staemens epigynous. 2. Castalia.

1. NYMPHAÈA (Tourn.) L. Yellow Pond Lily, Spatter-dock.

Leaves 1–3 dm. long, the sinus extending about one-third their length; petals cuneate to oblanceolate, truncate; stigma 10–25-rayed.
Sepals 9–12; flowers 6–10 cm. in diameter; stamens red. 1. *N. polysepala.*
Sepals usually 6; flowers 4–7 cm. in diameter; stamens yellow. 2. *N. variegata.*
Leaves 5–10 cm. long, the sinus extending fully one-half their length; petals spatulate, thin; stigma 7–10-rayed; flowers about 2.5 cm. in diameter. 3. *N. microphylla.*

2. CASTÀLIA Salisb. Water Lily, Pond Lily. 1. *C. Leibergii.*

Family 48. RANUNCULACEAE. Crowfoot Family.

Carpels 1-ovuled; fruit of achenes.
Petals wanting; sepals often petal-like.
Sepals imbricate in the bud; leaves all alternate, or only those subtending the inflorescence opposite.
Flowers subtended by opposite or verticillate leaf-like bracts.
Styles short, not elongating in fruit. 1. Anemone.
Styles much elongating in fruit, plumose. 2. Pulsatilla.
Flowers not subtended by opposite or verticillate bracts.
Leaves ternately compound. 3. Thalictrum.

Leaves palmately cleft. 4. TRAUTVETTERIA.
Sepals valvate in the bud; leaves all opposite.
Stamens erect; sepals thickish, more or less converging; staminodia wanting. 6. VIORNA.
Stamens spreading; sepals spreading from the base.
Flowers mostly paniculate; sepals white or yellow, firm, without a border; staminodia wanting. 5. CLEMATIS.
Flowers solitary; sepals blue or purple, thin; staminodia usually present. 7. ATRAGENE.
Petals usually present.
Sepals spurred; small annuals with basal linear leaves; receptacle in fruit elongate-cylindrical; stamens 5. 8. MYOSURUS.
Sepals not spurred; plant usually bearing cauline as well as basal leaves; receptacle in fruit spherical, conical or short-cylindric; stamens more than 5.
Achenes transversely wrinkled; petals white. 9. BATRACHIUM.
Achenes not transversely wrinkled.
Achenes not ribbed.
Petals yellow, at least without; sepals deciduous.
Achenes without an empty upper portion; plants not scapose. 10. RANUNCULUS.
Achenes with the lower half enclosing the seed; the upper portion empty, flattened and spongy; plants scapose. 11. COPTIDIUM.
Petals pink, rose-colored, or white; sepals marcescent-persistent. 12. BECKWITHIA.
Achenes longitudinally ribbed; petals yellow.
Achenes compressed; leaves simple, crenate or lobed. 13. HALERPESTES.
Achenes terete; leaves compound. 14. CYRTORHYNCHA.
Carpels with several ovules; fruit of follicles or berries.
Hypanthium not developed; petals wholly superior.
Flowers regular.
Petals inconspicuous or none, not spurred.
Fruit of follicles; flowers solitary.
Follicles sessile; leaves simple or cleft.
Petals wanting; leaf-blades entire or merely toothed. 15. CALTHA.
Petals present, but small, linear; leaf-blades palmately parted and toothed. 16. TROLLIUS.
Follicles stipitate; petals clawed; leaves compound or dissected.
Petals hooded and nectariferous at the summit; leaves ternate. 17. COPTIS.
Petals filiform or linear beyond the nectariferous pit; leaves pinnately dissected. 18. CHRYSOCOPTIS.
Fruit a berry; leaves twice or thrice ternately compound. 19. ACTAEA.
Petals conspicuous, produced into a spur or at least saccate at the base; leaves ternately compound. 20. AQUILEGIA.
Flowers irregular.
Posterior sepal spurred. 21. DELPHINUM.
Posterior sepal hooded, helmet-shaped or boat-shaped. 22. ACONITUM.
Hypanthium somewhat developed, lined at the mouth by a fleshy perigynous disk. 23. PAEONIA.

1. **ANEMÒNE** (Tourn.) L. WIND-FLOWER, ANEMONE.

Plants with tuberous roots; sepals 6–20. 1. *A. tuberosa.*
Plants with a rootstock; sepals 5–6, rarely more.
Achenes densely villous.
Style filiform, usually deciduous; heads of fruit spherical or nearly so; involucral leaves short-petioled or subsessile.
Leaves ternate; segments broadly cuneate or flabelliform, crenate or slightly cleft. 2. *A. parviflora.*
Leaves 2–4 times ternate; segments linear to oblong or oblanceolate.
Styles 1–3 mm. long; leaves 2–3 times ternate.
Achenes merely strigose on the back, densely villous on the sides; styles 2–3 mm. long; leaf-blades glabrate; segments oblanceolate. 3. *A. letonensis.*
Achenes villous all over; style 1–2 mm. long.
Leaflets thick, glabrate, strongly veined; segments oblanceolate, acutish. 4. *A. lithophila.*
Leaf-blades thin, usually long-hairy, not strongly veined; segments linear to lanceolate acute. 5. *A. globosa.*
Styles 4–6 mm. long; leaves 3–4 times ternate; segments narrowly linear. 6. *A. Drummondii.*
Styles subulate, persistent; heads of fruit from rounded oblong to cylindric; involucral leaves long-petioled.
Heads elongate, cylindric; styles about 1 mm. long; flowers usually subumbellate. 7. *A. cylindrica.*
Heads of fruit rounded-oblong; styles about 2 mm. long; flowers truly cymose.
Petals greenish white, 1 cm. long or less; styles in fruit divergent. 8. *A. virginiana.*
Petals white, 1.5 cm. long; styles suberect. 9. *A. riparia.*

Achenes not villous.
Achenes wing-margined; plant stout.
Sepals yellow; styles very long, reflexed. 10. *A. Richardsoni.*
Sepals white or pink; styles not reflexed.
Flowers cymose; achenes sparsely hirsute when young, sessile; styles long, straight. 11. *A. canadensis.*
Flowers subumbellate; achenes glabrous, stipitate; styles short, curved. 12. *A. zephyra.*
Achenes not wing-margined, pilose; style minute; plant slender; flowers solitary. 13. *A. Piperi.*

2. PULSATÍLLA Adans. Pasque-flower, Blue Tulip, Wild Crocus, Lion's Beard (Fruit).

Flowers purple or violet, seldom white; involucral leaves sessile, palmately divided into linear lobes. 1. *P. ludoviciana.*
Flowers white or tinged with purple; involucral leaves petioled, ternate and twice pinnately dissected. 2. *P. occidentalis.*

3. THALÍCTRUM L. Meadow Rue, Maid-of-the-Mist.

Flowers perfect.
Plant 2 dm. or less (rarely 3 dm.) high; achenes turgid; filaments filiform. 1. *T. alpinum.*
Plant 3–10 dm. high; achenes flat and very oblique; filaments clavate. 2. *T. sparsiflorum.*
Flowers dioecious or polygamous.
Achenes turgid, thick-walled; ribs thick and almost corky, separated by acute grooves.
Plants polygamous; stem-leaves subsessile, the basal ones petioled.
Achenes, petiolules, and lower surfaces of the leaves decidedly viscid-pubescent. 3. *T. dasycarpum.*
Achenes, petiolules, and the lower surfaces of the leaves glabrous or slightly viscid-puberulent. 4. *T. purpurascens.*
Plants dioecious; all leaves petioled.
Achenes equally acutish at both ends; leaves very thin and not strongly veined. 5. *T. dioicum.*
Achenes more acute at the upper end than at the lower; leaves firm, strongly veined. 6. *T. venulosum.*
Achenes more or less flattened, thin-walled; ribs not thick, separated by wide, shallow, rounded grooves.
Achenes sessile.
Achenes more than twice as long as broad, slightly if at all oblique.
Achenes about 4 times as long as broad, 6–8 mm. long, 1.5–2 mm. wide. 7. *T. occidentale.*
Achenes less than 3 times as long as broad.
Achenes 6–8 mm. long, 2.5–3.5 mm. wide. 8. *T. megacarpum.*
Achenes 4–5 mm. long, 1.5–2 mm. wide. 9. *T. columbianum.*
Achenes not quite twice as long as broad, decidedly oblique. 10. *T. Fendleri.*
Achenes stipitate. 11. *T. stipitatum.*

4. TRAUTVETTÈRIA F. & M. False Bugbane.

Styles in fruit about one-third as long as the body of the achenes; filaments broader than the anthers. 1. *T. grandis.*
Styles in fruit less than one-fourth as long as the body of the achenes; filaments not broader than the anthers. 2. *T. media.*

5. CLÉMATIS L. Virgin's Bower, White Clematis, Traveler's Joy, Pipe-Stem.

Plant dioecious; flowers white, paniculate.
Inflorescence usually longer than the leaves, its branches and the pedicels strongly ascending; leaflets lanceolate or ovate-lanceolate; sepals oblanceolate. 1. *C. ligusticifolia.*
Inflorescence shorter than the leaves, its branches and the pedicels more spreading; leaflets broadly ovate, usually subcordate at the base; sepals spatulate. 2. *C. brevifolia.*
Plant with perfect yellowish flowers, solitary in the axils. 3. *C. orientalis.*

6. VIÒRNA Reichenb. Vase-vine, Leather-flower, Old Man's Whiskers and Lion's Beard (fruit).

Sepals not or indistinctly dilated above.
Calyx rounded-urceolate; sepals broadly ovate, merely the tips spreading.
Leaf-segments ovate to ovate-lanceolate, 2–5 cm. long. 1. *V. Scottii.*
Leaf-segments linear to lanceolate, 1–2 cm. long. 2. *V. Bakeri.*
Calyx elongated-campanulate; sepals oblong-lanceolate, about one-fourth or more of their length spreading.
Middle and upper leaves subsessile, thrice ternate; ultimate segments linear or linear-lanceolate. 3. *V. hirsutissima.*
Middle and upper leaves distinctly petioled, twice ternate; ultimate segments lanceolate. 4. *V. Wyethii.*

Sepals decidedly dilated at the apex.
Sepals acute or short-acuminate; plant in age glabrate; leaf-segments lanceolate. 5. *V. Jonesii.*
Sepals obtuse or merely acutish; plant permanently villous; leaf-segments linear. 6. *V. eriophora.*

7. **ATRÁGENE** L. Bell Rue, Purple Virgin's Bower.

Leaves merely ternate.
Staminodia usually decidedly spatulate; leaflets variously toothed or cleft, not long-acuminate.
Lobes or teeth of the leaves rounded or obtuse at the apex; sepals ovate. 1. *A. diversiloba.*
Lobes or teeth of the leaves acute or acuminate; sepals lanceolate. 2. *A. grosseserrata.*
Staminodia linear or none; leaflets entire or crenate above the middle, long-acuminate. 3. *A. columbiana.*
Leaves twice or thrice ternate; staminodia usually linear or lacking.
Secondary leaflets merely toothed or cleft.
Secondary leaflets broadly ovate, with broadly ovate teeth. 4. *A. repens.*
Secondary leaflets lanceolate, with lanceolate or ovate-lanceolate lobes or teeth. 5. *A. pseudoalpina.*
Secondary leaflets divided to near the midrib. 6. *A. tenuiloba.*

8. **MYOSÙRUS** L. Mouse-tail.

Achenes with a flat back, only slightly carinate, and tipped with a very short appressed beak. 1. *M. minimus.*
Achenes strongly carinate on the back, tipped with a subulate, ascending beak.
Beak more than half as long as the achene proper; spike short and dense. 2. *M. aristatus.*
Beak very short; spike of the achenes long and slender. 3. *M. lepturus.*

9. **BATRÀCHIUM** S. F. Gray. White Water Crowfoot.

Leaves all submerged and finely dissected, with linear to capillary divisions.
Divisions of the leaves rather few, flat, 0.5–1.5 mm. wide. 1. *B. Porteri.*
Divisions of the leaves very slender, filiform or capillary.
Beak of the achenes nearly 1 mm. long. 2. *B. longirostre.*
Beaks of the achenes minute or none.
Petals 5–7 mm. long, broadly obovate; stamens many.
Primary divisions of the leaves 1–1.5 cm. long, rather rigid, scarcely collapsing when withdrawn from the water. 3. *B. trichophyllum.*
Primary divisions of the leaves 1.5–3 cm. long, flaccid, collapsing when withdrawn from the water. 4. *B. flaccidum.*
Petals less than 5 mm. long, oblong-obovate; stamens 5–12.
Stem slender, but not capillary; leaves not very flaccid. 5. *B. Drouetii.*
Stem capillary-filiform; leaves very flaccid. 6. *B. confervoides.*
Upper leaf-blades floating, reniform, merely cleft or toothed, the rest submersed and with capillary divisions. 7. *B. Grayanus.*

10. **RANÚNCULUS** (Tourn.) L. Crowfoot, Buttercup.

Achenes smooth.
Leaves linear to oval, entire, or merely denticulate or crenate, none divided or cleft. I. Flammulae.
Some of the leaves at least cleft.
Sepals black-hairy. II. Nivales.
Sepals not black-hairy.
Some of the basal leaves entire.
Basal leaves linear or divided into 3 linear divisions. V. Digitati.
Basal leaves elliptic to reniform. III. Glaberrimi.
None of the leaves entire.
Neither floating water plants nor creeping mud plants, if rooting at the nodes, the leaves not palmately lobed or dissected.
Achenes turgid, marginless.
Petals much exceeding the sepals.
Basal leaves not divided to the base. IV. Affines.
Leaves all divided to the base; achenes glabrous.
Leaves ternate, with simple linear divisions; plants very low, 0.5 dm. or less. V. Digitati.
Leaves 2–3 times ternate; plants 5–20 cm. high. VI. Triternati.
Petals scarcely exceeding the sepals.
Plants low, less than 1 dm. high. VII. Pygmaei.
Plants taller, 3–6 dm. high. VIII. Abortivi.
Achenes compressed, with a distinct margin.
Beak of the achenes strongly hooked; heads of fruit globose. IX. Recurvati.
Beak of the achenes straight or nearly so; achenes in ours glabrous.
Beak short.
Leaves, at least the basal ones, pinnately ternate, the terminal division at least petioled. X. Repentes.

Leaves palmately divided. XI. ACRES.
Beak long. XII. HISPIDI.
Immersed aquatics or creeping mud plants, with palmately lobed, divided, or dissected leaves. XIII. MULTIFIDI.
Achenes prickly; annuals. XIV. MURICATI.

I. FLAMMULAE.

Plants rooting at the nodes.
Stem filiform, prostrate; petals about 3 mm. long. 1. *R. reptans.*
Stem not filiform, at first ascending; petals about 5 mm. long. 2. *R. unalaschensis.*
Plants erect or ascending, not rooting at the nodes.
Leaves appressed-pubescent on the lower side. 3. *R. microlonchus.*
Leaves glabrous.
Blades of the basal leaves acute at the base.
Petals spatulate or oblong, usually 6–8, 6–8 mm. long. 4. *R. alismaefolius.*
Petals obovate, usually only 5.
Petals 7–10 mm. long; plants over 2 dm. high; leaves not very thin. 5. *R. Bolanderi.*
Petals 5–6 mm. long; plant low, seldom 2 dm. high; leaves very thin. 6. *R. alismellus.*
Blades of the basal leaves cordate or at least rounded at the base. 7. *R. Populago.*

II. NIVALES.

Leaf-blades spatulate or elliptic, 2–4-toothed at the apex. 8. *R. Macauleyi.*
Leaf-blades of the basal leaves reniform or flabelliform, 3–5-lobed or 3–5-cleft. 9. *R. nivalis.*

III. GLABERRIMI.

One species. 10. *R. glaberrimus.*

IV. AFFINES.

Achenes pubescent, with a short recurved beak; heads oblong to cylindric.
Some of the basal leaf-blades merely crenate, the rest mostly 3-cleft at the apex, with a narrow middle lobe.
Sepals densely villous.
Petals broadly obovate, about 1 cm. long. 11. *R. cardiophyllus.*
Petals wanting. 29. *R. apetalus.*
Sepals not densely villous; petals oblong-obovate, 3–6 mm. long.
Petals 5–6 mm. long; heads of achenes oblong. 12. *R. inamoenus.*
Petals 3–5 mm. long; heads of achenes cylindric. 13. *R. micropetalus.*
Basal leaf-blades digitately or pedately cleft with acute lobes.
Basal leaf-blades reniform or rounded-cordate. 14. *R. affinis.*
Basal leaf-blades cuneate-flabelliform. 15. *R. saxicola.*
Achenes glabrous; beak straight, usually slender.
Plant glabrous, except the more or less villous sepals.
Petals 7–12 mm. long; lobes of the basal leaves acutish.
Basal leaf-blades cuneate-flabelliform; head of achenes somewhat oblong, 5–10 mm. long.
Basal leaf-blades cleft half way down or less. 15. *R. saxicola.*
Basal leaf-blades cleft more than half way down. 16. *R. eximius.*
Basal leaf-blades reniform or at least truncate at the base, divided more than half way down; heads of achenes globular. 17. *R. Suksdorfii.*
Petals 4–8 mm. long; lobes of the basal leaves obtuse or rounded.
Heads of fruit decidedly oblong; basal leaf-blades orbicular, seldom reniform, the earliest not cleft more than half way down.
Leaves thick; petals about 4 mm. long. 18. *R. utahensis.*
Leaves thin; petals about 6 mm. long. 19. *R. alpeophilus.*
Heads of achenes spherical or nearly so; basal leaf-blades decidedly reniform, cleft deeper than half way down.
Lobes of the upper stem-leaves elliptical, oval or obovate. 20. *R. Eschscholtzii.*
Lobes of the upper stem-leaves linear to oblong.
Stem about 2 dm. high; lateral lobes of the basal leaves 2–3-toothed. 21. *R. Helleri.*
Stem less than 1 dm. high; lateral lobes of the basal leaves 4–5-toothed. 22. *R. vericundus.*
Plant more or less pubescent. 23. *R. ovalis.*

V. DIGITATI.

One species. 24. *R. Jovis.*

VI. TRITERNATI.

Plant less than 1 dm. high; petals about 5 mm. long; segments of the leaves very short, 3–5 mm. long; beak recurved. 25. *R. Drummondii.*
Plant usually more than 1 dm. high; petals 5–18 mm. long; segments of the leaves 1 cm. or more long; beak slender, not recurved.
Primary divisions of the basal leaves petiolate; segments linear, somewhat narrowed downward; stems usually several-flowered; roots fibrous. 26. *R. stenolobus.*
Primary divisions of the basal leaves sessile; segments narrowly linear, almost filiform, not narrowed downward; stems 1–2-flowered; roots fleshy-fibrous. 27. *R. adoneus.*

VII. PYGMAEI.

Sepals glabrous or nearly so; lateral lobes of the basal leaves 2–3-toothed. 28. *R. pygmaeus.*

Sepals copiously pubescent; lateral lobes of the basal leaves 4–5-toothed. 22. *R. vericundus.*

VIII. Abortivi.

Basal leaves, at least some of them, merely crenate.
Achenes pubescent; heads oblong to cylindrical.
Petals present; sepals not petaloid. 13. *R. micropetalus.*
Petals wanting; sepals with petaloid margins. 29. *R. apetalus.*
Achenes glabrous, with a minute beak; heads subglobose.
Basal leaf-blades cordate at the base; plant glabrous. 30. *R. abortivus.*
Basal leaf-blades rarely cordate at the base; plant, especially the stem, with spreading hairs. 31. *R. micranthus.*
All the leaves divided or lobed; annuals. 32. *R. sceleratus.*

IX. Recurvati.

Flowers small; petals only 2–5 mm. long; basal leaf-blades divided into 3 rhombic or cuneate-obovate, cleft divisions.
Petals 2–3 mm. long.
Stem glabrous; achenes glabrous. 33. *R. Douglasii.*
Stem hairy; achenes usually hirsute when young. 34. *R. Bongardi.*
Petals 4–5 mm. long; achenes glabrous. 35. *R. Earlei.*
Flowers larger; petals 5–12 mm. long; basal leaves often biternately cleft into linear, lanceolate, ovate, or cuneate divisions; achenes glabrous.
Pubescence of the stem appressed. 36. *R. acriformis.*
Pubescence of the stem spreading.
Stem low and slender, seldom more than 3 dm. high; petals oblong to oval. 37. *R. occidentalis.*
Stem tall, 5–10 dm. high; petals broadly obovate. 38. *R. montanensis.*

X. Repentes.

Petals less than 1 cm. long.
Plant glabrous or nearly so. 39. *R. oreganus.*
Plant decidedly pubescent.
Heads of achenes decidedly oblong, about 5 mm. thick. 40. *R. pennsylvanicus.*
Heads of achenes globose, 7–12 mm. thick.
Plants not stoloniferous; primary segments of the leaves cuneate at the base; beak half as long as the body of the achene. 41. *R. Macounii.*
Plant producing long lateral branches, rooting at the nodes; primary segments of the lower leaves more or less truncate or subcordate at the base; beak one-third as long as the body of the achene. 42. *R. rivularis.*
Petals more than 1 cm. long; stem creeping. 43. *R. repens.*

XI. Acres.

One species. 44. *R. acris.*

XII. Hispidi

Petals obovate; divisions of the leaves lanceolate or ovate. 45. *R. platyphyllus.*
Petals elliptic; divisions at least of the upper leaves linear. 46. *R. orthorhynchus.*

XIII. Multifidi.

Leaves deeply cordate at the base, their primary divisions lobed or dissected; style about two-thirds as long as the achene.
Achenes callous-margined. 47. *R. delphinifolius.*
Achenes marginless.
Stem glabrous. 48. *R. Purshii.*
Stem pubescent. 49. *R. limosus.*
Leaves truncate or slightly cordate at the base, their primary lobes entire or merely crenate; styles minute.
Floating water plants; at least some of the leaves cordate at the base. 50. *R. intertextus.*
Rooting mud plants; none of the leaves cordate at the base. 51. *R. hyperboreus.*

XIV. Muricati.

One species. 52. *R. arvensis.*

11. COPTÍDIUM Beurl.

1. *C. lapponicum.*

12. BECKWÍTHIA Jeps.

Scape 1-flowered, bractless; achenes 8–10 mm. long, inflated. 1. *B. Andersonii.*
Scape 2–3-flowered, with a leaf-like bract; achenes 3–4 mm. long, not inflated. 2. *B. juniperina.*

13. HALERPÉSTES Greene.

1. *H. Cymbalaria.*

14. CYRTORHÝNCHA Nutt.

Sepals spatulate or oblong-ovate, more or less contracted at the base.
Leaf-segments thick, mostly acute; inflorescence corymbiform. 1. *C. ranunculina.*
Leaf-segments thin, broad; inflorescence not corymbiform. 2. *C. rupestris.*
Sepals broadly round-ovate, not at all clawed; petals usually wanting. 3. *C. neglecta.*

15. CÁLTHA (Rupp.) L. Marsh-marigold, Meadow-gowan.

Stem scapiform or rarely with a small leaf, erect; sepals white or greenish white.
- Plant 1–3 dm. high, often 2-flowered; leaf-blades orbicular or oval, 3–10 cm. long.
  - Filaments narrower than and twice as long as the anthers; follicles erect. 1. *C. leptosepala.*
  - Filaments broader than the anthers and only slightly longer; follicles ascending or more or less spreading above. 2. *C. rotundifolia.*
- Plant 5–8 cm. high, one-flowered: leaf-blades 1–2 cm. long; filaments broader than the anthers and 2–3 times as long. 3. *C. chelidonii.*

Stem leafy, creeping or floating. 4. *C. natans.*

16. TRÓLLIUS L. Globe-flower. 1. *T. albiflorus.*

17. CÓPTIS Salisb. Gold-thread. 1. *C. trifoliata.*

18. CHRYSOCÓPTIS Nutt. 1. *C. occidentalis.*

19. ACTAÈA L. Baneberry.

Filaments whitish; raceme short; pedicels in fruit 1–3 cm. long.
- Fruit white, ellipsoid, 9–12 mm. long. 1. *A. eburnea.*
- Fruit red.
  - Fruit ellipsoid, 10–12 mm. long. 2. *A. rubra.*
  - Fruit spherical or nearly so, 5–7 mm. long. 3. *A. arguta.*

Filaments greenish; raceme elongate; pedicels very short, even in fruit less than 1 cm. long; fruit red. 4. *A. viridiflora.*

20. AQUILÈGIA (Tourn.) L. Columbine.

Plant very low; stem scapiform and 1-flowered; spur curved; flower blue or purple. 1. *A. Jonesii.*

Stem more or less leafy.
- Petals merely saccate, not spurred at the base; terminal leaflet rhombic, acute. 2. *A. Eastwoodiae.*
- Petals spurred; all leaflets obtuse.
  - Lamina of the petals longer than the strongly curved spurs, truncate.
    - Stems many times exceeding the basal leaves; styles in fruit about one-fourth as long as the follicles. 3. *A. brevistyla.*
    - Stem only slightly exceeding the basal leaves; styles in fruit about half as long as the follicles.
      - Plant perfectly glabrous; flowers blue. 4. *A. saximontana.*
      - Peduncles and follicles sparingly hairy; flowers sulphur-yellow or greenish. 5. *A. larimiensis.*
  - Lamina of the petals shorter than the slightly curved or straight spurs.
    - Spur not over 2 cm. long; flowers nodding.
      - Sepals and spurs red; spur usually straight (except in No. 9).
        - Lamina of the petals small, less than 4 mm. long or none; sepals spreading or reflexed.
          - Sepals 10–15 mm. long, shorter than or rarely equalling the spurs. 6. *A. truncata.*
          - Sepals 15–25 mm. long, exceeding the spurs. 7. *A. columbiana.*
        - Lamina of the petals 6–12 mm. long.
          - Sepals spreading or reflexed, longer than the spurs. 8. *A. formosa.*
          - Sepals ascending, usually shorter than the spurs.
            - Sepals much longer than the lamina of the petals; spur incurved. 9. *A. latiuscula.*
            - Sepals equalling or little exceeding the lamina of the petals; spur straight.
              - Spur gradually tapering to the apex; follicles glabrous. 10. *A. rubicunda.*
              - Spur cylindric-filiform for some distance near the apex; follicles pubescent. 11. *A. elegantula.*
      - Sepals and spurs wholly yellow; spur usually slightly curved.
        - Leaves thick, densely pubescent beneath; spur slender, abruptly narrowed near the base. 12. *A. micrantha.*
        - Leaves thin, glabrous or glabrate; spur gradually tapering to near the apex. 13. *A. flavescens.*
    - Spur 2.5–6 cm. long; flowers in anthesis usually erect.
      - Basal leaves usually twice ternate; spur 3–4 cm. long.
        - Sepals blue or white, ovate-lanceolate, acute or obtuse; spur 3–5 cm. long.
          - Stem (except the upper part) and petioles glabrous.
            - Plant 3–5 dm. high; leaflets thin, rather large, not conspicuously glaucous. 14. *A. coerulea.*
            - Plant 1–2 dm. high; leaflets thick, small and conspicuously glaucous. 15. *A. scopulorum.*
          - Stem and petioles glandular and villous throughout. 16. *A. pallens.*
        - Sepals yellow, lanceolate, somewhat acuminate; spur 2.5–3 cm. long. 17. *A. oreophila.*
      - Basal leaves usually thrice ternate; spur 4–7 cm. long; sepals yellow.

Spur 4–5 cm. long; sepals less than 2 cm. long, ovate-lanceolate, acute; follicles strongly curved outward. 18. *A. thalictrifolia.*
Spur 5–7 cm. long; sepals 2–4 cm. long, lanceolate to ovate-lanceolate, acuminate; follicles almost straight. 19. *A. chrysantha.*

21. DELPHÍNIUM (Tourn.) L. Larkspur.

A. Carpels and follicles 3, rarely 4 or 5.
I. Pedicels erect or nearly so.
a. Sepals white or merely tinged with blue or with a blue spot; follicles more than 1 cm. long, about four times as long as broad; seeds squamellate. (I. Caroliniana.)
Lobes of the lateral petals divergent; lower pedicels elongate; spur mostly erect; stem strigose-canescent throughout. 1. *D. Penardii.*
Lobes of the lateral petals not divergent; lower pedicels not elongate; spur mostly horizontal; stem usually glabrous below, viscid above. 2. *D. virescens.*
b. Sepals dark blue; follicles less than 1 cm. long, only 2–3 times as long as broad; seeds not squamellate, but wing-margined. (II. Stricta.)
Lower petals blue and bearded; perennials with fasciculate tuberous roots.
Stem glabrous below.
Stem glabrous throughout; pedicels equalling or exceeding the spur.
Leaves pubescent; follicles glabrous. 27. *D. Brownii.*
Leaves glabrous and glaucous; follicles strigose. 25. *D. elongatum.*
Stem puberulent above; follicles viscid-villous.
Pedicels shorter than the spurs. 3. *D. distichum.*
Pedicels longer than the spurs. 4. *D. megacarpum.*
Stem more or less pubescent throughout, finely so below, viscid above.
Spur with reflexed tip; upper petals with a lanceolate, 2-cleft apex; inflorescence appressed-pubescent. 5. *D. simplex.*
Spur straight; upper petals with an obliquely ovate-triangular apex, slightly 2-toothed; inflorescence villous. 6. *D. cyanoreios.*
Lower petals white; roots fleshy, fusiform.
Stem leafy throughout, viscid. 7. *D. diversicolor.*
Stem leafy only at the base, glabrous below. 8. *D. Burkei.*
II. Pedicels ascending or spreading.
a. Inflorescence few-flowered; the lower pedicels elongate; sepals broad, spreading, dark blue; leaf-segments narrow; root short and thickened, often tuber-like. (III. Bicoloria.)
Upper petals as well as the lower blue; pod straight. 9. *D. Helleri.*
Upper petals white or yellowish, only veined with blue, the lower mostly blue.
Follicles 1.5–2 cm. long, more or less arcuate, the upper portion divergent.
Roots fascicled, thick, but not tuber-like; stem usually viscid, at least above; blades of the lateral petals about 10 mm. long.
Spur fully half longer than the obtuse lateral sepals. 10. *D. Leonardi.*
Spur only slightly longer than the acute lateral sepals. 11. *D. bicolor.*
Roots tuber-like; stem not viscid; blades of the lateral petals about 5 mm. long.
Stem with long, soft reflexed hairs. 12. *D. Menziesii.*
Stem appressed-strigose or glabrous.
Flowers dark blue. 13. *D. Nelsonii.*
Flowers light blue. 14. *D. dumetorum.*
Follicles less than 1 cm. long, only the tips divergent; stem strigose; root tuber-like.
Segments of the leaves all narrow. 15. *D. Nuttallianum.*
Segments of the basal leaves oblong to cuneate. 16. *D. depauperatum.*
b. Lower pedicels not elongate; plant with a long woody taproot or a rootstock.
1. Segments of the basal leaves obtuse, mucronate. (IV. Scaposa.)
Sepals light blue; lobes of the first basal leaves linear-oblong; spur a little longer than the upper petals. 17. *D. coelestinum.*
Sepals dark blue; lobes of the first basal leaves rounded to oblong; spur nearly twice as long as the upper petals.
Follicles glabrous or sparingly viscid; stem usually scapiform. 18. *D. scaposum.*
Follicles strigose; stem leafy. 19. *D. xylorhizum.*
2. Segments of all the leaves acute or acuminate.
a. Plant not all viscid.
*Follicles pubescent. (V. Robusta.)
Stem grayish strigose throughout.
Leaves divided into cuneate, merely cleft, segments. 20. *D. geranifolium.*
Leaves repeatedly divided into linear lobes.
Stem 3–5 dm. high; bractlets oblong, close under the calyx. 21. *D. Geyeri*
Stem 5–20 dm. high; bractlets subulate, 2–3 mm. below the calyx. 24. *D. robustum.*
Stem glabrous and glaucous, at least below.
Plant cespitose, 2–4 dm. high. 34. *D. glaucescens.*
Plant not cespitose, 5–20 dm. high.
Inflorescence dense; follicles scarcely at all arcuate.

Leaf-segments 3–7, broad, cuneate, merely cleft into broadly lanceolate lobes.
Sepals yellowish white or light blue. 22. *D. cucullatum.*
Sepals dark blue. 23. *D. canmorense.*
Leaf-segments narrow, repeatedly dissected into linear or linear-lanceolate divisions.
Inflorescence paniculate, strigose-puberulent; leaf-segments linear. 24. *D. robustum.*
Inflorescence racemose, simple, glabrous or nearly so; leaf-segments narrowly lanceolate. 25. *D. elongatum.*
Inflorescence lax; follicles strongly arcuate. 26. *D. ramosum.*
** Follicles glabrous. (VI. GLAUCA.) 27. *D. Brownii.*
b. Plant more or less viscid, especially the pedicels.
* Plant tall, 4–20 dm. high, not cespitose.
Leaves dissected into linear lobes; follicles densely strigose. (VII. VISCIDA.) 28. *D. viscidum.*
Leaves divided into cuneate or rhomboid, merely cleft, divisions.
Follicles viscid-pubescent. (VIII. OCCIDENTALIA.)
Flowers light blue, or yellowish, tinged with blue or purple. 29. *D. multiflorum.*
Flowers dark blue. 30. *D. occidentale.*
Follicles glabrous. (IX. SUBALPINA.)
Sepals obtuse. 31. *D. reticulatum.*
Sepals acute or acuminate.
Sepals at most equalling the spur. 32. *D. Barbeyi.*
Sepals much longer than the spur. 33. *D. attenuatum.*
** Plant less than 4 dm. high, cespitose. (X. ALPESTRIA.)
Stem 2–4 dm. high, puberulent or glabrous. 34. *D. glaucescens.*
Stem about 1 dm. high, viscid-pubescent. 35. *D. alpestre.*
B. Carpels and follicles solitary; petals 2, united. (XI. CONSOLIDAE.) 36. *D. Ajacis.*

22. ACONÌTUM L. ACONITE, MONKSHOOD, WOLFSBANE.

Hood boat-shaped, slightly saccate, almost semicircular in outline; stem slender, scarcely more than 3 dm. high; perennials with tubers.
Ultimate divisions of the basal leaves linear, linear-oblong, or linear-lanceolate. 1. *A. tenue.*
Ultimate divisions of the basal leaves lanceolate. 2. *A. delphinifolium.*
Hood helmet-shaped, deeply saccate; stem stout, 4–10 dm. high; root fleshy, usually fusiform.
Stem, at least the upper portion, viscid-pubescent.
Primary divisions of the leaves cleft or toothed; upper end of pedicels not glabrous.
Front-line of the hood strongly concave, *i. e.*, the beak porrect, almost horizontal.
Lower sepals one-half to two-thirds as long as the lateral ones.
Beak of the hood almost as long as the portion below; inflorescence usually simple; follicles erect. 3. *A. porrectum.*
Beak of the hood seldom one-half as long as the portion below; inflorescence branched; follicles ascending-spreading. 4. *A. divaricatum.*
Lower sepals at least three-fourths as long as the lateral ones; leaf-segments rather broad. 5. *A. Bakeri.*
Front-line of the hood almost straight, *i. e.*, the beak directed downward, or slightly porrect in *A. columbianum.*
Segments of the leaves linear-lanceolate. 6. *A. ramosum.*
Segments of the leaves lanceolate.
Lateral sepals very oblique; upper margin semi-reniform. 7. *A. columbianum.*
Lateral sepals moderately oblique; upper margin slightly if at all concave.
Flowers blue. 8. *A. insigne.*
Flowers ochroleucous. 9. *A. lutescens.*
Primary divisions of at least the stem-leaves entire; thickened portion of the pedicels glabrous. 10. *A. patens.*
Whole plant glabrous. 11. *A. glaberrimum.*

23. PAEÒNIA L. PAEONY. 1. *P. Brownii.*

FAMILY 49. BERBERIDACEAE. BARBERRY FAMILY.

Primary leaves reduced to spines; secondary ones fascicled in their axils, simple or unifoliolate. 1. BERBERIS.
Primary leaves pinnately compound, evergreen, no secondary ones in their axils. 2. ODOSTEMON.

1. BÉRBERIS (Tourn.) L. BARBERRY. 1. *B. Fendleri.*

2. ODOSTÈMON Raf. OREGON GRAPES.

Fruit becoming dry and inflated at maturity; leaflets less than 3 cm. long. 1. *O. Fremontii.*

Fruit fleshy, not inflated at maturity, dark blue with a bloom; leaflets 3–10 cm. long.
Leaflets 3–11; bud-scales ovate or rounded, deciduous.
Prostrate, rising only 1–3 dm. over ground; leaves not very shining. 2. *O. Aquifolium.*
Erect, 3–15 dm. high; leaves very shining. 3. *O. nutkanus.*
Leaflets 13–17; bud-scales large, lanceolate, coriaceous, persistent. 4. *O. nervosus.*

Family 50. **PAPAVERACEAE** Juss. Poppy Family.

Hypanthium not developed; calyx not calyptrate; pod not elongate, 3–20-carpellary.
Ovary many-lobed, in fruit breaking up into many follicles, which at maturity break off into 1-seeded joints; leaves opposite. 1. Platystemon.
Ovary of two to many completely united and not separating carpels; leaves alternate.
Capsule opening by valves, at least at the summit.
Unarmed herbs; sepals neither horned nor hooded.
Petals in age thin, scarious-persistent; leaves basal, entire. 2. Arctomecon.
Petals not scarious-persistent; stem leafy; leaves pinnately divided or lobed. 3. Chelidonium.
Prickly-leaved leafy-stemmed herbs; sepals hooded or horned; petals deciduous. 4. Argemone.
Capsule opening by dentiform lids under the stigma. 5. Papaver.
Hypanthium more or less developed; calyx calyptrate, *i. e.*, the two sepals wholly united into a funnelform body, lifted off by the expanding petals; capsule elongate, 2-valved usually from the base to the apex. 6. Eschscholtzia.

1. **PLATYSTÈMON** Benth. Cream-cups. 1. *P. californicus.*

2. **ARCTOMÈCON** Torr. & Frem. 1. *A. humilis.*

3. **CHELIDÒNIUM** (Tourn.) L. Celandine. 1. *C. majus.*

4. **ARGEMÒNE** L. Prickly Poppy, Thistle Poppy.

Corolla yellow; leaves with light blotches. 1. *A. mexicana.*
Corolla white; leaves not blotched.
Prickles of the fruit not squarrose.
Stem unarmed, prickly, or bristly, but not hispidulous.
Leaves acutely lobed; horns of the sepals glabrous. 2. *A. intermedia.*
Leaves round-lobed; horns of the sepals bristly. 3. *A. rotundata.*
Stem hispidulous-pubescent as well as densely prickly. 4. *A. hispida.*
Prickles of the fruit strong, recurved-spreading, squarrose. 5. *A. squarrosa.*

5. **PAPÀVER** (Tourn.) L. Poppy.

Leaves densely hirsute; lobes lanceolate or oblong. 1. *P. radicatum.*
Leaves glabrous or with a few bristles; lobes rounded. 2. *P. pygmaeum.*

6. **ESCHSCHÓLTZIA** Cham. California Poppy.

Petals 8–25 mm. long, broadly cuneate; stem scapiform; stamens many.
Seeds superficially reticulate; lobes of the leaves oblong or linear, 1–2 mm. wide. 1. *E. mexicana.*
Seeds deeply pitted; lobes of the leaves linear-filiform, about 0.5 mm. wide. 2. *E. glyptosperma.*
Petals 3–6 mm. long, obovate; stem usually more or less leafy; stamens few. 3. *E. minuscula.*

Family 51. **FUMARIACEAE.** Fumitory Family.

Both of the outer petals spurred at the base. 1. Bicuculla.
One of the outer petals spurred.
Ovules several or many; fruit an elongated capsule. 2. Capnoides.
Ovules solitary; fruit an indehiscent nut. 3. Fumaria.

1. **BICUCÚLLA** Adans. Dutchman's Breeches, Bleeding Heart.

Flowers racemose; spur elongate, oblong, divergent. 1. *B. occidentalis*
Flowers solitary; spur very short and rounded. 2. *B. uniflora.*

2. **CAPNOÌDES** Adans. Corydalis.

Annuals or biennials.
Plants low, ascending or diffuse; corolla yellow.
Pod glabrous.
Bracts narrowly lanceolate; pod pendulous, torulose. 1. *C. aureum.*
Bracts ovate-lanceolate, ovate, or obovate; pod erect, not torulose. 2. *C. montanum.*
Pod covered with translucent vesicles. 3. *C. crystallinum.*
Plants erect, tall, usually 3–6 dm. high; corolla rose or purplish, with purple tips. 4. *C. sempervirens.*

Perennials with thickened roots; corolla white or tinged with purple.
Bracts spatulate or oblanceolate, about 1 cm. long; dorsal crest of the hood narrow.
Sepals reniform, laciniate. 5. *C. Cusickii.*
Sepals narrowly hastate, with large toothed basal lobes. 6. *C. hastatum.*
Bracts linear; dorsal crests of the hood obsolete.
Corolla 2 cm. long; sepals broadly ovate, obtuse, their auricles subentire; pod lance-obovoid. 7. *C. Brandegei.*
Corolla 1.5 cm. long; sepals ovate, acute, their auricles toothed; pod broadly obovoid. 8. *C. brachycarpum.*

3. FUMÀRIA (Tourn.) L. Fumitory. 1. *F. officinalis.*

Family 52. **BRASSICACEAE.** Mustard Family.

I. Pod sessile, or short-stipitate (in no. 48–53); sepals erect, ascending, or connivent in anthesis (except in 32, 33 and 53); anthers not twisted (except in no. 48 and 50–53).
A. Pod compressed or flattened contrary to the narrow partition.
Pod not didymous; plants not densely stellate, except in *Smelowskya*.
Pod orbicular, oval, oblong or cuneate, strongly flattened; plant not stellate.
Pod 1-celled, winged all around. 1. Isatis.
Pod 2-celled, not winged all around.
Cells of the pod 1-seeded.
Pods ovate-cordate, acute at the apex, neither winged nor retuse. 2. Cardaria.
Pods orbicular, elliptic or rarely ovate, retuse or notched at the apex, usually winged above. 3. Lepidium.
Cells of the pods 2-seeded.
Pods more or less winged; cotyledons accumbent; hairs of the plant simple or none. 4. Thlaspi.
Pods wingless; cotyledons incumbent.
Pods cuneate; plants with branched hairs. 5. Bursa.
Pods elliptic; plants glabrous or minutely stellate. 6. Hutchinsia.
Pod ovate or lanceolate, not strongly flattened; plant stellate. 7. Smelowskya.
Pod more or less didymous; plants stellate.
Seeds solitary in each cell; pods strongly flattened. 8. Dithyrea.
Seeds several in each cell; pods more or less inflated. 9. Physaria.
B. Pod neither compressed nor flattened contrary to the partition.
1. Anthers not sagittate at the base, not twisted.
a. Pod terete or tetragonal.
† Pod short, scarcely more than twice as long as broad.
Cotyledons accumbent; valves of the pods nerveless.
Pubescence stellate or canescent with branched hairs; seeds flat.
Petals white, 2-cleft. 35. Berteroa.
Petals yellow or tinged with red, not 2-cleft. 10. Lesquerella.
Pubescence not stellate; seeds terete.
Petals white; stout perennials with a thick taproot. 14. Armoracia.
Petals yellow or ochroleucous, rarely white; annuals, or perennials with rootstocks. 15. Radicula.
Cotyledons incumbent or folded transversely; valves of the pod 1-nerved; pubescence if any not densely stellate.
Submerged water plants, with subulate leaves; pods subglobose or elliptical. 11. Subularia.
Land plants with ample leaves.
Capsule obovoid, dehiscent, many-seeded. 12. Camelina.
Capsule globose, indehiscent, 1–2-seeded. 13. Neslia.
†† Pod long, several times as long as broad.
* Pod scarcely beaked, merely tipped by a short style or a sessile stigma.
‡ Pod terete or nearly so.
Pubescence of simple hairs.
Seeds in two rows in each cell of the pod.
Seeds globose or oblong, turgid; valves of the pod nerveless; cotyledons accumbent.
Petals with a median nectary, usually yellow. 15. Radicula.
Petals without nectary, white. 16. Sisymbrium.
Seeds flattened; valves of the pod 1-nerved; cotyledons partly incumbent. 17. Turritis.
Seeds in 1 row in each cell of the pod.
Pod subulate, tapering from the base to the apex. 18. Erysimum.
Pod cylindric or tapering both ways.
Perennials with creeping rootstocks. 46. Schoenocrambe.
Annuals, or perennials with taproots.

Septum of the pod nerved, with longitudinal reticulations. 19. NORTA.
Septum of the pod nerveless, with transverse reticulations. 20. BRAYA.
Pubescence of forked hairs.
Flowers pedicelled, yellow to straw-colored, rarely white; leaves pinnatifid or lobed. 21. SOPHIA.
Flowers sessile, rose or white; leaves toothed or entire. 22. MALCOLMIA.
†† Pod 4-angled.
Stem-leaves clasping by a cordate base. 23. CONRINGIA.
Stem-leaves not clasping.
Corolla white. 24. ARABIDOPSIS.
Corolla yellow or purplish.
Seeds plump; leaf-blades entire or toothed.
Hairs of the stem and leaves appressed, 2-branched, attached near the middle; partition of the pod not cross-veined. 25. CHEIRINIA.
Hairs of the stem and leaves spreading, branched, attached at the end; partition of the pod cross-reticulate. 26. HESPERIS.
Seeds flat; leaf-blades pinnatifid. 27. CAMPE.
** Pod with a long distinct beak.
Pods indehiscent, constricted between the seeds, which are separated from each other by false, spongy, transverse partitions. 28. RAPHANUS.
Pods opening by valves, without transverse partitions.
Beak flat and sword-like, 4-angled, or two-edged, contiguous with an internode, containing 1 seed.
Valves of the pod with 3 strong nerves. 29. SINAPIS.
Valves of the pod with 1 strong nerve. 30. ERUCA.
Beak elongated-conic, seedless. 31. BRASSICA.
b. Pod flattened parallelly to the broad partition.
Fruit orbicular, 1-celled, 1-seeded, indehiscent; sepals somewhat spreading.
Fruit not winged; pubescence of branched hairs, those of the fruit uncinate. 32. ATHYSANUS.
Fruit winged, usually marked with fenestrations or sinuations on the margin; pubescence of simple hairs. 33. THYSANOCARPUS.
Fruit 2-celled, 2–several-seeded, dehiscent (in some species of *Draba* tardily so); sepals erect.
Pod orbicular.
Valves convex; filaments dilated and toothed near the base; plants stellate, leafy.
Pod suborbicular, with flat margins; petals entire or nearly so. 34. ALYSSUM.
Pod oblong, slightly if at all compressed; petals notched. 35. BERTEROA.
Valves flat; filaments not toothed; plant scapose, with simple hairs. 36. IDAHOA.
Pod oblong, ovate or linear, rarely nearly orbicular; valves flat, or if convex not with flattened margins; filaments unappendaged.
Valves nerveless.
Valves elastically dehiscent; seeds in one row; pod long.
Stem naked below, 2–3-leaved; cotyledons thick, very unequal. 37. DENTARIA.
Stem leafy; cotyledons flat, equal. 38. CARDAMINE.
Valves not elastically dehiscent; seeds in two rows; pod usually short. 39. DRABA.
Valves nerved and reticulate, not elastically dehiscent.
Anthers not subsagittate at the base.
Pod short, from orbicular to linear-oblong. 39. DRABA.
Pod elongated-linear.
Cotyledons accumbent. 40. ARABIS.
Cotyledons incumbent. 23. CONRINGIA.
Anthers subsagittate at the base.
Stigma 2-lobed; seeds margined; cotyledons strictly accumbent. 41. PARRYA.
Stigma entire, capitate; seeds marginless; cotyledons obliquely accumbent. 42. PHAENICAULIS.
2. Anthers sagittate at the base.
Calyx urn-shaped, closed; blades of the petals narrow, undulate-crisp.
Cotyledons accumbent; stem not succulent; flowers small. 43. CARTIERA.
Cotyledons incumbent; stem more or less succulent; flowers comparatively large. 44. CAULANTHUS.
Calyx campanulate, open; petals ample.
Pod flat; anthers neither curved nor twisted.
Stigma 2-lobed.
Lobes of the stigma over the placentae; perennials. 41. PARRYA.
Lobes of the stigmas over the valves; annuals. 45. STREPTANTELLA.

Stigma entire, capitate; seeds marginless.
Cotyledons obliquely accumbent; low perennials, with pink or purplish flowers. 42. PHAENOCAULIS.
Cotyledons incumbent; tall leafy plants, with greenish flowers. 46. CHLOROCRAMBE.
Pod terete or tetragonal; anthers curved or twisted (except in *Schoenocrambe*).
Sepals unequal, the lower longer; hairs, at least some of them, stellate or branched. 49. HETEROTHRIX.
Sepals equal or nearly so; hairs simple or none.
Sepals erect or ascending in anthesis.
Stigma distinctly lobed, its lobes expanded over the septum.
Plants with creeping rootstocks. 47. SCHOENOCRAMBE.
Plants with taproots. 48. THELYPODIOPSIS.
Stigma entire or, if distinctly lobed, the lobes expanded over the valves.
Stigma conical; outer sepals gibbous at the base. 50. HESPERIDANTHUS.
Stigma truncate; sepals scarcely gibbous at the base.
Septum of the pod without a distinct midrib. 51. THELYPODIUM.
Septum of the pod with a strong midrib. 52. PLEUROPHRAGMA.
Sepals strongly spreading or reflexed in anthesis, soon deciduous. 53. STANLEYELLA.
II. Pod terete, long-stipitate; sepals spreading or reflexed in anthesis; anthers curved and spirally twisted. 54. STANLEYA.

1. ISÀTIS L. WOAD. 1. *I. tinctoria.*

2. CARDÀRIA Desv. 1. *C. Draba.*

3. LEPÍDIUM L. PEPPERGRASS, CANARY-GRASS, BIRD-SEED.

Style evident, at least equalling the wing-margins.
Introduced annuals or biennials.
Upper leaves entire, perfoliately clasping. 1. *L. perfoliatum.*
Leaves all pinnatifid, none clasping. 2. *L. sativum.*
Native perennials.
Pods 2–4 mm. wide.
None of the leaves pinnatifid.
Basal leaves oblanceolate, entire-margined, thick; stamens 2. 3. *L. integrifolium.*
Basal leaves more or less toothed, thinner; stamens 6.
Basal leaves truncate and 3-toothed at the apex. 4. *L. Vaseyanum.*
Basal leaves oblanceolate, acute at the apex, serrate-crenate. 5. *L. crenatum.*
Basal leaves at least pinnatifid.
Segments of the basal leaves short, obovate or oblanceolate in outline; petals obovate.
Styles 2–3 times as long as the wing-margins; racemes in age more or less elongate.
Styles about 3 times as long as the wing-margins; leaves coriaceous; segments entire or merely round-toothed, obtusish; plant glabrous; stem few-leaved. 6. *L. scopulorum.*
Styles about 2 times as long as the wing-margins; leaves not coriaceous; segments usually cleft or deeply toothed, acute.
Upper stem-leaves linear, entire; plant glabrous or the upper part of the stem slightly puberulent. 7. *L. Crandallii.*
Leaves usually all pinnatifid; stem puberulent throughout.
Stem glandular-puberulent; pod oval or ovate, narrowed towards the apex. 8. *L. montanum.*
Stem densely papillose-puberulent; pod orbicular. 9. *L. papilliferum.*
Styles slightly exceeding the wing-margins; racemes numerous, short; plant puberulent. 10. *L. brachybotryum.*
Segments of the basal leaves elongate, linear, oblong, or lanceolate.
Only the lower leaves pinnatifid; pod broadly oval; style scarcely longer than the width of the wing-margins; petals orbicular. 11. *L. alyssoides.*
Stem leaves except the uppermost also pinnatifid; pod narrower, acutish at both ends; style about twice as long as the width of the wing-margins; petals obovate to elliptic.
Plant low, 3 dm. high or less; leaves or their lobes narrowly linear. 12. *L. Jonesii.*
Plant tall, 4–10 dm. high; upper leaves broadly linear or oblong. 13. *L. Eastwoodiae.*
Pods 6–8 mm. wide. 14. *L. Fremontii.*
Style obsolete, or at least shorter than the width of the wing-margins; annuals or biennials.
Wing-margins of the fruit not produced at the apex into distinct lobes or teeth.
Pods glabrous or rarely minutely puberulent when young.
Petals conspicuous, at least equalling the sepals, spatulate or obovate.

Style distinct, but short; blades of the petals broadly obovate, much exceeding the sepals. 15. *L. idahoense.*
Style none; blades of the petals spatulate.
Pubescence, if any, of cylindrical or subulate hairs; petals well exceeding the sepals, at least in the earlier flowers.
Stem glabrous or nearly so.
Cotyledons accumbent; petals broadly spatulate. 16. *L. virginicum.*
Cotyledons incumbent; petals narrowly spatulate or oblanceolate. 17. *L. texanum.*
Stem densely pubescent. 18. *L. hirsutum.*
Pubescence of the stem of short, clavate hairs; petals about equalling the sepals.
Stem low, 1–3 dm. high, branched below; primary basal leaves oblanceolate, serrate. 19. *L. ramosum.*
Stem taller, 4–6 dm. high, simple below, branched above; primary basal leaves pinnatifid. 20. *L. simile.*
Petals none or minute, scarcely more than half as long as the sepals, linear or linear-spatulate.
Plants branched near the base; petals usually present (except in *L. divergens*).
Racemes usually numerous, on short branches from the axils of the upper leaves; pods broadest below the middle; wing-margins narrow.
Axillary racemes very short and dense, usually shorter than the leaves; petals more than half as long as the sepals. 21. *L. ramosissimum.*
Axillary racemes at last elongate; petals very minute or lacking. 22. *L. divergens.*
Racemes elongate, terminal; pods broadest above the middle; wing-margins fully 0.5 mm. wide at the apex. 23. *L. elongatum.*
Plant simple below, branched above; petals none; racemes elongate, terminal. 24. *L. densiflorum.*
Pods hirsute, at least on the margins.
Stem-leaves linear, mostly entire. 25. *L. pubecarpum.*
Stem-leaves spatulate, toothed or laciniate. 26. *L. Georginum.*
Wing-margins of the fruit produced at the apex into acute lobes or teeth.
Stem erect, 3–5 dm. high. 27. *L. Fletcheri.*
Stem decumbent, 3–15 cm. high.
Pod obovate or elliptic; stamens 2; leaves linear or linear-spatulate. 28. *L. Bourgeauanum.*
Pod ovate; stamens 4; basal leaves often pinnatifid. 29. *L. dictyotum.*

4. THLÁSPI (Tourn.) L. Penny Cress, Penny-grass. Wild Sweet Alyssum.

Pods orbicular in outline, broadly wing-margined and deeply notched at the apex; sepals green; annuals. 1. *T. arvense.*
Pods obovate or oblanceolate-cuneate in outline, with narrow margins, acute, truncate or slightly notched at the apex; sepals with white or rarely purplish margins; perennials.
Petals 2.5–3 mm. long; pod oblanceolate-cuneate, 2–2.5 mm. wide. 2. *T. parviflorum.*
Petals 4–7 mm. long; pods cuneate or obovate-cuneate, 3 mm. or more wide.
Pods acutish at the apex, neither emarginate nor retuse. 3. *T. californicum.*
Pods rounded or truncate at the apex, emarginate or retuse.
Pods rounded at the apex; sinus narrow.
Caudex rather slender; stem 1–2 dm. high; petals spatulate, about 5 mm. long. 4. *T. Nuttallii.*
Caudex stout, densely cespitose; stem less than 1 dm. high; petals broadly obovate, 6–7 mm. long. 5. *T. coloradense.*
Pods truncate or nearly so at the apex; sinus very broad and open.
Stem 2–3 dm. high; stem-leaves ample, broader than the basal ones; sepals green, with white margins. 6. *T. glaucum.*
Stem 1 dm. or less; stem-leaves reduced; sepals and often also petals purplish. 7. *T. purpurascens.*

5. BÚRSA Weber. Shepherd's Purse. 1. *B. Bursa-pastoris.*

6. HUTCHÍNSIA R. Br. 1. *H. procumbens.*

7. SMELÓWSKIA C. A. Meyer.

Basal leaves merely lobed, cuneate to oblanceolate in outline; pod 5–6 mm. long, tapering towards the base. 1. *S. lobata.*
Leaves all deeply pinnatifid.
Pod ovate, 4–5 mm. long, obtuse at the base; calyces and pedicels densely villous; leaves white-villous. 2. *S. ovalis.*
Pod lanceolate or oblanceolate, 7–12 mm. long, tapering at each end.
Segments of the basal leaves spatulate or oblong. 3. *S. americana.*
Segments of the basal leaves linear or linear-oblong. 4. *S. lineariloba.*

8. DITHYRÈA Harv. 1. *D. Wislizeni.*

9. PHYSÀRIA A. Gray. Double Bladder-pod.

Cells of the pods much inflated, the upper sinus acute, narrow.
- Pods deeply cordate at the base; lower sinus almost as deep as the upper.
  - Pubescence short and close. 1. *P. didymocarpa.*
  - Pubescence long and loose. 2. *P. lanata.*
- Pods not cordate at the base or slightly so; lower sinus none or very shallow.
  - Cells of the pods 5–10 mm. in diameter, without ridges on the sides.
    - Some of the basal leaves more or less fiddle-shaped.
      - Leaves of the decumbent flowering stems reduced; terminal lobe of the basal leaves rounded or reniform, very obtuse, entire. 3. *P. vitulifera.*
      - Leaves of the ascending flowering stems ample; terminal lobes of the basal leaves rhombic or ovate, acute or sometime obtuse, sinuate. 4. *P. floribunda.*
    - None of the basal leaves fiddle-shaped.
      - Basal leaves oblanceolate or spatulate, acute, 2–4 cm. long; pods slightly cordate at the base. 5. *P. acutifolia.*
      - Basal leaves rounded-obovate, 4–10 cm. long; pod acutish at the base. 6. *P. brassicoides.*
  - Cells of the pods 10–18 mm. in diameter when fully developed, ridged on the sides. 7. *P. Newberryi.*

Cells of the pods not much inflated, the upper sinus shallow, open. 8. *P. Geyeri.*

10. LESQUERÉLLA S. Wats. Bladder-pod.

Ovary and pod stellate-pubescent.
- Pod ovoid or ellipsoid.
  - Pod distinctly compressed and acute at the apex.
    - Pod 6–8 mm. long; plant usually more than 1 dm. high.
      - Basal leaves broadly oval; septum of the pod elliptic in outline; style equalling the pod. 1. *L. Shearis.*
      - Basal leaves oblanceolate to obovate; septum of the pod ovate in outline; style much shorter than the pod. 2. *L. curvipes.*
    - Pod 3–5 mm. long; plant usually 1 dm. or less high.
      - Basal leaves linear-oblanceolate or linear.
        - Pod strongly compressed above.
          - Leaves narrowly linear-oblanceolate; plant pulvinate. 3. *L. alpina.*
          - Leaves narrowly linear; plant multicipitous, with a subterranean woody caudex. 4. *L. parvula.*
        - Pods slightly compressed. 5. *L. intermedia.*
      - Basal leaves spatulate; pod not strongly compressed above.
        - Plant densely pulvinate, 2–5 cm. high; leaves 2 cm. long or less; pedicels erect or nearly so. 6. *L. condensata.*
        - Plant cespitose, 5–10 cm. high; leaves about 2 cm. long or more; basal leaves oblanceolate-spatulate; pedicels spreading, S-curved. 7. *L. spatulata.*
  - Pod not compressed above.
    - Basal leaf-blades rounded or broadly spatulate.
      - Stem-leaves small, generally less than 1 cm. long, linear-oblanceolate.
        - Basal leaf-blades obovate-spatulate; style shorter than the pod. 8. *L. prostrata.*
        - Basal leaf-blades rhombic-ovate; style longer than the very acute pod. 9. *L. Wardii.*
      - Stem-leaves oblanceolate or obovate, 1–2 cm. long. 10. *L. montana.*
    - Basal leaf-blades linear-oblanceolate; stem-leaves narrowly so. 11. *L. arenosa.*
- Pod globose.
  - Plant perennial.
    - Pod 2–3 mm. in diameter.
      - Basal leaf-blades spatulate or oblanceolate.
        - Stem very slender; stem-leaves oblanceolate, 1–3 cm. long.
          - Plant 5 cm. or less high; pod less than 2 mm. broad; petals purple. 12. *L. rosea.*
          - Plant usually more than 5 cm. high; pod 2–3 mm. broad; petals yellow.
            - Pedicels ascending. 13. *L. versicolor.*
            - Pedicels in fruit recurved. 11. *L. arenosa.*
        - Stem stouter, strict; stem-leaves linear, 2–6 cm. long. 14. *L. ludoviciana.*
      - Basal leaf-blades broadly oval, ovate, or elliptic.
        - Basal leaves repand-dentate; stems stout; raceme loose; pedicels recurved. 15. *L. Macounii.*
        - Basal leaves entire; stem slender; racemes congested; pedicels upcurved. 16. *L. utahensis.*
    - Pod 5–6 mm. in diameter; stem-leaves broadly spatulate. 17. *L. macrocarpa.*
  - Plant annual. 18. *L. Gordoni.*

Ovary and pod glabrous, globose.
- Plant annual. 18. *L. Gordoni.*
- Plant perennial.
  - Basal leaf-blades oblanceolate; stem-leaves narrowly so.
    - Plants usually more than 3 dm. high; flowers and fruit corymbose. 19. *L. Engelmanni.*

Plant usually less than 3 dm. high; inflorescence at least in fruit elongate, racemose. 20. *L. stenophylla.*
Basal leaf-blades broadly oval. 21. *L. ovalifolia.*

11. SUBULÀRIA L. 1. *S. aquatica.*

12. CAMELÌNA Crantz. False Flax.

Stem glabrous. 1. *C. sativa.*
Stem pubescent. 2. *C. microcarpa.*

13. NÉSLIA Desv. 1. *N. paniculata.*

14. ARMORÀCIA Gaertn. Horse-radish. 1. *A. Armoracia.*

15. RADÍCULA Hill. Yellow Water-cress, Marsh-cress.

Perennials with rootstocks; petals much exceeding the sepals.
Pods papillose.
Pods ovate; leaves coarsely toothed. 1. *R. calycina.*
Pods lance-oblong or linear, mostly curved; leaves pinnatifid.
Leaves thin; petals white; fruit recurved. 2. *R. trachycarpa.*
Leaves thick; petals yellow; fruit erect. 3. *R. Columbiae.*
Pods not papillose. 4. *R. sinuata.*
Annuals or biennials.
Pods thickened towards the apex and truncate, curved, longer than the pedicels. 5. *R. clavata.*
Pods not thickened towards the apex, acute or obtuse.
Pods spherical to oblong-ellipsoid, in the latter case shorter than the pedicels.
Pedicels 4–10 mm. long.
Pods 5–8 mm. long, 2–3 mm. thick; stem sparingly hirsute. 6. *R. pacifica.*
Pods 3–5 mm. long (rarely 6–7 mm. in *R. palustris*), 1.5–2 mm. thick.
Stem more or less hirsute. 7. *R. hispida.*
Stem glabrous.
Stem tall, 3–8 dm. high; stigma prominent, 2-lobed. 8. *R. terrestris.*
Stem low, divaricately branched, 1–3 dm. high; stigma scarcely thicker than the style. 9. *R. alpina.*
Pedicels 2–5 mm. long, pod globose. 10. *R. sphaerocarpa.*
Pods oblong to linear-cylindrical, equalling or longer than the short pedicels.
Style about 1 mm. long.
Leaves nearly all pinnatifid, with obtuse divisions. 11. *R. obtusa.*
Leaves mostly sinuate, or if pinnatifid, with acute divisions.
Pods short-ellipsoid, straight on straight pedicels. 10. *R. sphaerocarpa.*
Pods elongate-ovoid, curved, on curved pedicels. 12. *R. curvipes.*
Style minute, 0.5 mm. long or less.
Pods 1.5 mm. thick or less, distinctly pedicelled; seeds tuberculate.
Petals about 2 mm. long or more; pods linear, 1 mm. or less thick, strongly curved.
Leaves divided to near the midrib, their segments obtuse. 13. *R. curvisiliqua.*
Leaves merely cleft, with acute segments. 14. *R. Nuttallii.*
Petals rarely more than 1 mm. long; pods usually slightly tapering upwards, about 1.5 mm. thick, straight or slightly curved.
Leaves pinnatifid.
Low, slender, less than 2 dm. high; leaves not auricled at the base. 15. *R. lyrata.*
Taller and stouter, over 2 dm. high; petioles of the stem-leaves auricled at the base. 16. *R. Underwoodii.*
Leaves entire or merely sinuate. 17. *R. integra.*
Pods fully 2 mm. thick, almost sessile; seeds pitted. 18. *R. sessiliflora.*

16. SISŸMBRIUM (Tourn.) L. Water-cress. 1. *S. Nasturtium-aquaticum.*

17. TURRÌTIS L. Tower Mustard. 1. *T. glabra.*

18. ERŸSIMUM L. Hedge Mustard. 1. *E. officinale.*

19. NÓRTA Adans. Tumble Mustard. 1. *N. altissima.*

20. BRAŸA Sternb. & Hoppe. 1. *B. purpurascens.*

21. SÓPHIA Adans. Tansy Mustard.

Leaves all pinnately dissected; pod not twisted.
Pedicels ascending or spreading.
Pods linear, 1 mm. wide, somewhat curved; seeds uniserial.
Stem simple or with erect-ascending branches; pods 8–25 mm. long.
Pods 15–25 mm. long; leaves mostly thrice pinnatifid.

Inflorescence elongate; pods nearly erect; pedicels about 1 cm. long. 1. *S. Sophia.*
Inflorescence short; pods spreading; pedicels about 0.5 mm. long. 2. *S. sophioides.*
Pods 8–15 mm. long; leaves once or twice pinnatifid.
Stem glabrous, or sparingly stellate or glandular puberulent.
Leaf-segments all narrow, linear or oblong, or those of the lower leaves broad and obtuse, more or less grayish stellate.
Stem grayish stellate, not at all glandular; leaf-segments all narrow. 3. *S. gracilis.*
Stem very sparingly stellate, often glandular-puberulent; segments of the lower leaves broad, very obtuse. 4. *S. californica.*
Leaf-segments all broad, lanceolate or ovate, thin and bright green.
Pods divergent; primary segments of the uppermost leaves often entire. 5. *S. leptophylla.*
Pods ascending; primary segments of the leaves all sharply cut-lobed. 6. *S. incisa.*
Stem densely glandular-pubescent. 7. *S. viscosa.*
Stem diffusely branched; pods 5–8 mm. long. 8. *S. purpurascens.*
Pods more or less clavate, 5–12 mm. long, 1–2 mm. wide; seeds usually more or less biserial.
Pods 8–12 mm. long, mostly erect on spreading pedicels.
Leaves and stem green, only sparingly stellate.
Stem divaricately branched; branches making with the stem an angle of 45 degrees or more; pedicels 7–10 mm. long, usually shorter than the pod. 9. *S. ramosa.*
Stem simple or with almost erect or strongly ascending branches.
Petals much exceeding the sepals.
Terminal segments of the upper leaves usually elongate, linear, entire; segments all narrow. 10. *S. filipes.*
Terminal segments not greatly elongate; segments of the lower leaves obovate. 11. *S. magna.*
Petals not much exceeding the sepals; segments narrow; terminal segments of the upper leaves not elongate. 12. *S. intermedia.*
Leaves and stem cinereous-stellate.
Petals longer than the sepals, about 2 mm. long; upper leaves mostly once pinnate, with elongate, broad terminal segments. 13. *S. andrenarum.*
Petals not longer than the sepals, about 1.5 mm. long; upper leaves usually more dissected; terminal segment narrow, not elongate. 14. *S. halictorum.*
Pods 5–8 mm. long.
Pods acute above, acuminate below; style obsolete.
Pods ascending or spreading. 15. *S. pinnata.*
Pods erect; leaves sparingly stellate. 16. *S. Nelsonii.*
Pods acuminate at both ends; style evident. 17. *S. leptostylis.*
Pedicels erect.
Pods over 1 mm. thick.
Plant green and almost glabrous. 18. *S. procera.*
Plant cinereous-pubescent. 19. *S. Hartwegiana.*
Pods about 0.75 mm. thick; plant glandular-puberulent, especially the inflorescence, or glabrous. 20. *S. glandulifera.*
Lower leaves merely coarsely toothed or lobed; pod twisted. 21. *S. perplexa.*

22. MALCÓLMIA R. Br. 1. *M. africana.*

23. CONRÍNGIA (Heist.) Link. HARE'S-EAR. 1. *C. orientalis.*

24. ARABIDÓPSIS (DC.) Schur. MOUSE-EAR CRESS.

Stem-leaves not auriculate-clasping or sagittate at the base.
Annual. 1. *A. Thaliana.*
Perennial. 2. *A. Richardsonii.*
Stem-leaves auriculate-clasping or sagittate at the base.
Pubescent biennials or perennials.
Pod 2 mm. thick; style obsolete. 3. *A. virgata.*
Pod 1 mm. thick; style 0.5 mm. long. 4. *A. stenocarpa.*
Glabrous annual. 5. *A. glauca.*

25. CHEIRÍNIA Link. WILD WALL-FLOWER, PRAIRIE-ROCKET, YELLOW PHLOX.

Petals less than 1 cm. long.
Petals 4–5 mm. long. 1. *C. cheiranthoides*
Petals 6–10 mm. long.
Perennials or biennials; pods ascending. 2. *C. inconspicua.*
Annuals; pods spreading. 3. *C. repanda.*
Petals more than 1 cm. long.
Petals light yellow.
Biennials or short-lived perennials, not cespitose.

Pods almost terete, slightly compressed, tapering into a style more than 2 mm. long. 4. *C. arida.*
Pods 4–angled; style only slightly narrower, very short.
Basal leaves, as well as whole plant, grayish-strigose, not silvery.
Pods widely spreading, 4–8 cm. long, stout; stem-leaves usually sinuate-dentate. 5. *C. aspera.*
Pods strongly ascending or almost erect, 8–12 cm. long (except in *C. brachycarpa*).
Stem-leaves usually sinuately dentate. 6. *C. elata.*
Stem-leaves entire or rarely denticulate.
Stem-leaves linear or nearly so; pod usually twisted, slender. 7. *C. asperrima.*
Stem-leaves oblanceolate; pod straight, stout.
Pod about 8 cm. long, 1.5 mm. thick. 8. *C. oblanceolata.*
Pod 4–6 cm. long, 2.5 mm. thick. 9. *C. brachycarpa.*
Basal leaves, at least, silvery white; stem-leaves narrowly linear.
Plant 2–3 dm. high; stem-leaves sinuate-dentate. 10. *C. Bakeri.*
Plant 1–2 dm. high; stem-leaves entire. 11. *C. argillosa.*
Low cespitose perennials.
Leaves entire-margined or minutely denticulate. 12. *C. nivalis.*
Leaves sinuate-dentate. 13. *C. radicata.*
Petals varying from orange to brown or purple.
Plant simple, 3–5 dm. high; basal leaves 5–10 cm. long, oblanceolate. 14. *C. Wheeleri.*
Plant cespitose, 1–2 dm. high; basal leaves 2–4 cm. long, spatulate.
Perennial with a branched caudex; stem usually more than 1 dm. high. 15. *C. amoena.*
Biennial; stem in flower a few cm. high, more elongate in fruit, leafy only at the base. 16. *C. Pallasii.*

26. HÉSPERIS (Tourn.) L. Dame's Rocket, Dame's Violet.
1. *H. matronalis.*

27. CÁMPE Dulac. Winter Cress, Scurvy Grass.
Pod obtusely angled; leaves with 1–4 pairs of divisions.
Divisions of the basal leaves 1–2 small pairs; pod slender, ascending. 1. *C. americana.*
Divisions of the basal leaves 3–4 pairs; pod stouter, erect and appressed. 2. *C. stricta.*
Pod sharply 4–angled; leaves with 4–8 pairs of divisions. 3. *C. verna.*

28. RÁPHANUS L. Radish. 1. *R. sativus.*

29. SINÀPIS L. Mustard, Charlock.
Beak sword-shaped, constituting more than half the length of the pod. 1. *S. alba.*
Beak somewhat 4-angled, but flattened and 2-edged, constituting about one-third the length of the pod. 2. *S. arvensis.*

30. ERÙCA (Tourn.) Mill. Garden Rocket. 1. *E. Eruca.*

31. BRÁSSICA L. Cabbage, Rape, Turnip, Black Mustard.
None of the leaves clasping.
Pod slender, 4–angled, erect, appressed to the stem. 1. *B. nigra.*
Pod ascending, terete, but with a strong midvein. 2. *B. juncea.*
Upper stem-leaves clasping.
Leaves glaucous, all glabrous except the very earliest ones; petals cream-colored, long-clawed. 3. *B. campestris.*
Leaves not glaucous, the basal ones distinctly hairy; petals bright yellow, short-clawed. 4. *B. Rapa.*

32. ATHYSÀNUS Greene. 1. *A. pusillus.*

33. THYSANOCÁRPUS Hook.
Pods pubescent; plant glabrous and glaucous. 1. *T. trichocarpus.*
Pods glabrous.
Plant more or less hirsute; pod entire-margined, fenestrate, or with thin round areas. 2. *T. elegans.*
Plant glabrous; pod toothed, rarely with fenestrations or thin areas. 3. *T. amplectens.*

34. ALÝSSUM L. Alyssum, Sweet Alyssum. 1. *A. alyssoides.*

35. BERTERÒA DC. Hoary Alyssum. 1. *B. incana.*

36. IDAHÒA Nels. & Macb. Flat-pod. 1. *I. platysperma.*

37. DENTÀRIA L. Toothwort, Milk Maids. 1. *D. rupicola.*

38. CARDÁMINE L. Bitter Cress.

Leaves all entire.
- Plant dwarf, less than 1 dm. high, with a slender rootstock; leaf-blades oval, usually entire-margined. 1. *C. bellidifolia.*
- Plant more than 1 dm. high; blades at least of the stem-leaves sinuately toothed.
  - Plant 1–4 dm. high; upper leaves subsessile. 2. *C. Douglasii.*
  - Plant 3–6 dm. high; all leaves petioled.
    - Flowers about 1 cm. long; leaves not thick.
      - Plant glabrous or nearly so. 3. *C. cordifolia.*
      - Stem densely pilose; leaves also hairy. 4. *C. infausta.*
    - Flowers about 0.5 cm. long; leaves thickish, sinuately round-lobed. 5. *C. Leibergii.*

Some of the leaves at least pinnate.
- Petals 5–12 mm. long.
  - Petals 8–12 mm. long; leaflets 3, rhombic, 3–lobed or sinuately 3–toothed. 6. *C. angulata.*
  - Petals about 5 mm. long; leaflets 1–9, the terminal one much larger, cordate, ovate, or reniform, sinuately toothed.
    - Beak of the fruit about 2.5 mm. long. 7. *C. vallicola.*
    - Beak of the fruit about 1 mm. long.
      - Only a few of the leaves pinnate. 5. *C. Leibergii.*
      - Most of the leaves pinnately 3–7–foliolate. 8. *C. Breweri.*
- Petals 2–4 mm. long.
  - Leaflets of the stem-leaves usually only 3. 9. *C. unijuga.*
  - Leaflets of the stem-leaves 5–11.
    - Leaves glabrous; seeds small, more than 12 in each pod.
      - Beak of the pod less than 1 mm. long.
        - Stem few-leaved; petals 3–4 mm. long; racemes contracted, corymbiform, shorter than the subtending leaves. 10. *C. umbellata.*
        - Stem very leafy; petals 2–3 mm. long; raceme elongate.
          - Leaves thin; leaflets usually broad; stem glabrous or nearly so. 11. *C. pennsylvanica.*
          - Leaves thick; leaflets of the upper leaves narrow, linear or oblong; stem densely hairy below. 12. *C. multifolia.*
      - Beak of the pod more than 1 mm. long. 13. *C. acuminata.*
    - Leaves with scattered hairs; seeds large, 6–12 in each pod. 14. *C. oligosperma.*

39. DRÀBA L. Whitlow Grass, Draba.

Winter annuals.
- Style slender, 12 mm. long; filaments dilated. 1. *D. asprella.*
- Style obsolete.
  - Pods hairy.
    - Leaves all crowded on the lower part of the stem; flowers white; racemes short, on long naked peduncles.
      - Pods linear, appressed-hirsute; leaves entire.
        - Inflorescence even in fruit corymbiform; petals minute or none. 2. *D. micrantha.*
        - Inflorescence in fruit elongate; petals conspicuous. 3. *D. coloradensis.*
      - Pods oblong or elliptic, with spreading branched pubescence, often stellate; leaves usually toothed. 4. *D. cuneifolia.*
    - Leaves more or less scattered on the stem; flowers yellow or in age sometimes white.
      - Basal leaves obovate, ovate, or oblong; stem-leaves ample; pedicels longer than the pods. 5. *D. nemorosa.*
      - Basal leaves oblanceolate to oblong; stem-leaves smaller, oblong-lanceolate; pedicels shorter than the pods.
        - Pedicels divergent; leaves hirsute. 6. *D. montana.*
        - Pedicels ascending; leaves stellate, not hirsute. 7. *D. praealta.*
  - Pods glabrous.
    - Pedicels in fruit reflexed; petals white. 8. *D. deflexa.*
    - Pedicels ascending or spreading; petals yellow (except in No. 12).
      - Stem more or less leafy.
        - Pods 2–4 mm. long; stem-leaves thick. 9. *D. brachycarpa.*
        - Pods 6–8 mm. long; leaves thin.
          - Basal leaves obovate; stem-leaves several, broad; pedicels twice as long as the pod. 10. *D. lutea.*
          - Basal leaves oblanceolate; stem-leaves very few and small; pedicels slightly, if at all, longer than the pod. 11. *D. nitida.*
      - Stem scapiform or with a single leaf; leaves in a basal rosette.
        - Basal leaves spatulate; pods more than 1 cm. long.
          - Basal leaves broadly spatulate, finely stellate; petals white. 12. *D. Macouniana.*
          - Basal leaves spatulate, but not broadly so, hirsute as well as stellate; petals yellow. (Depauperate forms of) 11. *D. nitida.*
        - Basal leaves oblanceolate to linear, hirsute or glabrate; pods 5–8 mm. long.
          - Basal leaves oblanceolate or spatulate, hirsute. 13. *D. crassifolia.*
          - Basal leaves narrowly linear-oblanceolate, glabrous, except the very sparingly ciliate margins. 14. *D. Parryi.*

Perennials; style usually evident.
Plants scapose or nearly so.
Pod 16–20 mm. long and 7–8 mm. wide. 15. *D. eurycarpa.*
Pod less than 12 mm. long and 5 mm. wide.
Petals yellow.
Pods about twice as long as broad, 5–12 mm. long.
Pods glabrous or nearly so.
Leaves not stellate, glabrous, except the ciliate margin. (Depauperate variety of) 41. *D. streptocarpa.*
Leaves more or less stellate over the whole surface.
Leaves broadly spatulate, long-ciliate, especially on the margin; midrib weak. 16. *D. alpina.*
Leaves linear-oblanceolate, scarcely ciliate; midrib strong. 17. *D. glacialis.*
Pods pubescent.
Leaves obovate, densely and finely white-stellate; midrib indistinct. 18. *D. argyrea.*
Leaves spatulate or linear-oblong, sparingly stellate, with a strong midrib.
Plant cespitose, but not densely pulvinate; leaves oblanceolate or spatulate, rather finely stellate, spreading, not densely imbricate. 19. *D. incerta.*
Plant densely pulvinate; leaves linear-oblong, villous-hispid as well as stellate, densely imbricate. 20. *D. densifolia.*
Pods only slightly longer than broad.
Leaves stellate or with branched hairs.
Pod ovate or elliptic, compressed.
Pods densely stellate, about 5 mm. long, fully 4 mm. wide; midrib of the leaves indistinct.
Leaves densely and closely stellate, thick. 21. *D. ventrosa.*
Leaves sparingly long-hairy or glabrate above. 22. *D. sobolifera.*
Pods sparingly puberulent or glabrous, not more than 3 mm. wide, 3–5 mm. long.
Leaves oblong to linear; midvein strong.
Plants not densely pulvinate; leaves linear or linear-oblanceolate, 5–10 mm. long. 23. *D. oligosperma.*
Plant densely pulvinate; leaves oblong or linear-oblong, less than 5 mm. long, densely imbricate. 24. *D. andina.*
Leaves obovate, thick; midvein indistinct. 25. *D. uncinalis.*
Pod globose. 26. *D. sphaerocarpa.*
Leaves glabrous except the unbranched ciliations on the margins.
Leaves densely imbricate, short.
Pod pubescent; midvein of the leaves obsolete. 27. *D. sphaerula.*
Pod glabrous; midvein of the leaves prominent. 28. *D. pectinata.*
Leaves not densely imbricate; pod pubescent, 3–6 mm. long. 29. *D. Nelsonii.*
Petals white.
Leaves finely stellate.
Leaves linear or linear-oblanceolate.
Midrib of the leaves strong; pods 4–5 mm. long. 23. *D. oligosperma.*
Midribs of the leaves not strong; pods 6–8 mm. long. 30. *D. lapponica.*
Leaves broadly spatulate or obovate.
Pod oblong to linear, 6–12 mm. long.
Pods 6–8 mm. long, not twisted. 31. *D. nivalis.*
Pods 10–15 mm. long, more or less twisted. 32. *D. lonchocarpa.*
Pods broadly obovate, 3–4 mm. long. 25. *D. uncinalis.*
Leaves hirsute-ciliate on the margins, oblanceolate.
Style obsolete. 33. *D. fladnizensis.*
Style about 1 mm. long. 34. *D. oreibata.*
Plant leafy-stemmed.
Petals white.
Petals about 3 mm. long; pods 5–8 mm. long.
Plant 1–2 dm. high, densely grayish-stellate; pods longer than the pedicels. 35. *D. cana.*
Plants about 3 dm. high, greener; pods shorter than the pedicels. 36. *D. McCallae.*
Petals about 2 mm. long; pods more than 1 cm. long. 37. *D. columbiana.*
Petals yellow.
Plants glabrous, except the margins of the leaves, which are occasionally ciliate.
Leaves linear or narrowly linear-oblanceolate, thin.
Leaves much shorter than the flowering stem; pods lance-linear. 38. *D. chrysantha.*
Leaves almost equalling the flowering stem; pods ovate. 39. *D. graminea.*

Leaves spatulate or broadly oblanceolate, thick. 40. *D. crassa.*
Plant decidedly hairy.
Pubescence long-hirsute, with simple or slightly branched hairs. 41. *D. streptocarpa.*
Pubescence short, mostly of stellate or branched hairs.
Styles 1.5–2 mm. long; pods glabrous or slightly puberulent.
Pod not twisted; pubescence rather sparse or minute; stem-leaves usually sharply toothed.
Stem more or less hirsute. 42. *D. spectabilis.*
Stem minutely appressed-stellate. 43. *D. oxyloba.*
Pod twisted; pubescence dense and grayish; stem-leaves entire-margined or minutely denticulate. 44. *D. Helleriana.*
Style 1 mm. long; pods densely pubescent.
Stem erect or nearly so.
Leaves thin, the basal ones usually over 2 cm. long, the cauline ovate to lanceolate.
Petals 5 mm. or more long.
Petals pale yellow; stem-leaves often dentate. 45. *D. luteola.*
Petals bright yellow; stem-leaves entire-margined. 46. *D. surculifera.*
Petals 3–4 mm. long, pale yellow; stem-leaves entire-margined. 47. *D. aureiformis.*
Leaves thick, the basal ones oblanceolate, 1–2 cm. long, the cauline lanceolate or oblong. 48. *D. aurea.*
Stem decumbent.
Leaves finely stellate; pods twisted. 49. *D. decumbens.*
Leaves coarsely hairy, with branched hairs; pods not twisted. 50. *D. brachystylis.*

40. ÁRABIS L. Rock Cress, Wild Candytuft.

Basal leaves lyrately lobed; perennials. I. Lyratae.
Basal leaves entire-margined or toothed.
Pods erect or nearly so.
Leaves coarsely hirsute.
Stem-leaves neither cordate nor auricled at the base. II. Furcatae.
Stem-leaves cordate or auricled at the base; biennials. III. Hirsutae.
Leaves not coarsely hirsute; perennials.
Pubescence, if any, sparse and consisting of 2–forked or rarely 3–forked hairs. IV. Drummondianae.
Pubescence of at least the lower leaves decidedly stellate. V. Microphyllae.
Pods spreading or reflexed.
Pods and calyx stellate. VI. Pulchrae.
Pods not stellate.
Pods 3–4 mm. wide. VII. Suffrutescentes.
Pods 1–2.5 mm. wide.
Pods spreading or somewhat recurved on spreading pedicels.
Pods only 1–1.5 mm. wide. VIII. Macounianae.
Pods 1.5–2.5 mm. wide.
Perennials, with a caudex.
Plant tall, 3 dm. or more high, suffruticose at the base. IX. Perennantes.
Plant low, 1–2 dm. high, cespitose. X. Reconditae.
Stout biennials or short-lived perennials, 3 dm. high or more. XI. Arcuatae.
Pods and pedicels reflexed. XII. Retrofractae.

I. Lyratae.

Pods about 0.75 mm. wide; style more than 0.5 mm. long. 1. *A. lyrata.*
Pods fully 1 mm. wide; style almost obsolete. 2. *A. ambigua.*

II. Furcatae.

Seeds not winged; leaves hairy; pods 1 mm. wide or less. 3. *A. Nuttallii.*
Seeds winged at the lower end; leaves merely ciliate on the margins; pods 1.5–2 mm. wide. 4. *A. furcata.*

III. Hirsutae.

All sepals narrowly oblong; two of them with slightly saccate bases; petals 3–5 mm. long, yellowish white, less than twice as long as the sepals. 5. *A. ovata.*
Two of the sepals with strongly saccate bases, almost twice as broad as the others; petals 6–10 mm. long, pure white, fully twice as long as the sepals. 6. *A. rupestris.*

IV. Drummondianae.

Stems 3 dm. high or more, solitary or 2 or 3 from the same root.
Pods about 1.5 mm. wide. 7. *A. Drummondii.*
Pods about 3 mm. broad. 8. *A. connexa.*
Stems less than 3 dm. high, several from a cespitose caudex.
Pods strictly erect, blunt. 9. *A. albertina.*
Pods rather ascending, acute. 10. *A. Lyallii.*

V. MICROPHYLLAE.

Stems more than 3 dm. high; basal leaves 3–10 cm. long. 11. *A. oblanceolata.*
Stems usually less than 3 dm. high, from a branched caudex; basal leaves 1–2 cm. long.
Plant green; petals 7–8 mm. long; pods fully 2 mm. wide; stem-leaves ovate-lanceolate. 12. *A. oreophila.*
Plant grayish; petals about 5 mm. long; pods 0.75–1.5 mm. wide; stem-leaves oblong or linear, the lower oblanceolate.
Flowers few; pods more than 1 mm. wide; seeds somewhat 2-ranked; stem hirsute-ciliate below or glabrous. 13. *A. microphylla.*
Flowers many; pods less than 1 mm. wide; seeds strictly in one row; stem finely stellate. 14. *A. Crandallii.*

VI. PULCHRAE.

Seeds distinctly in two rows; stem-leaves not auricled.
Petals purple, 8–10 mm. long. 15. *A. pulchra.*
Petals white, 10–12 mm. long. 16. *A. formosa.*
Seeds in one row; stem-leaves more or less auricled; petals 5–8 mm. long.
Leaves usually coarsely toothed; petals pink, 6–8 mm. long. 17. *A. subpinnatifida.*
Leaves entire; petals white, 5–6 mm. long. 18. *A. MacDougalii.*

VII. SUFFRUTESCENTES.

Stems suffrutescent at the base; pods reflexed. 19. *A. suffrutescens.*
Stems not suffruticose; pods spreading. 20. *A. drepanoloba.*

VIII. MACOUNIANAE.

Petals about 4 mm. long; pod 3–4 cm. long; basal leaves 1–2 cm. long. 21. *A. Macounii.*
Petals about 8 mm. long; pod 4–6 cm. long; basal leaves 4–6 cm. long. 22. *A. arcoidea.*

IX. PERENNANTES.

One species. 23. *A. perennans.*

X. RECONDITAE.

Leaves finely stellate.
Leaves thick, canescent; stems simple.
Pod about 1.5 mm. wide, acute. 24. *A. Lemmonii.*
Pod about 2 mm. wide, obtuse. 25. *A. Egglestonii.*
Leaves thin, green; stem branched. 26. *A. recondita.*
Leaves more coarsely hairy, with branched hairs or merely ciliate on the margins.
Leaves densely hairy. 27. *A. setulosa.*
Leaves sparingly hairy or merely ciliate.
Plant green, not glaucous; pods 3 cm. long; seeds in one row but irregularly so.
Leaves firm, ciliate or somewhat hairy. 28. *A. rugocarpa.*
Leaves thin, almost perfectly glabrous. 29. *A. oxylobula.*
Plant glaucous or bluish-green; pods 4–5 cm. long; seeds in two rows. 30. *A. spatifolia.*

XI. ARCUATAE.

Pedicels and calyx long-ciliate. 31. *A. perelegans.*
Pedicels glabrous or merely stellate.
Calyx more or less stellate; petals 8 mm. long.
Stem 3–6 dm. high; basal leaves 2–4 cm. long, entire. 33. *A. Bourgovii.*
Stem 5–10 dm. high; basal leaves 5–10 cm. long, denticulate. 34. *A. Selbyi.*
Calyx glabrous or nearly so.
Leaves decidedly stellate; plants biennial.
Pods straight or slightly curved upwards, ascending-spreading. 32. *A. brachycarpa.*
Pods more or less arcuate and somewhat drooping.
Pods 8–10 cm. long; petals 8–10 mm. long. 35. *A. Stokesiae.*
Pods 4–6 cm. long; petals 5–8 mm. long.
Stem-leaves narrowly lanceolate.
Petals 8–10 mm. long, purple. 36. *A. divaricarpa.*
Petals about 5 mm. long, white or pinkish. 37. *A. densicaulis.*
Stem-leaves ovate, or oblong. 38. *A. fructicosa.*
Leaves coarsely stellate-hirsute; plants perennial.
Stem-leaves conspicuously sagittate at the base; sepals linear-oblong. 39. *A. gracilenta.*
Stem-leaves with inconspicuous auricles at the base; sepals broadly elliptic.
Basal leaves sparingly hirsute; stem-leaves lanceolate, 1.5–3 cm. long. 40. *A. Fendleri.*
Basal leaves densely hairy; stem-leaves oblong-lanceolate, 1–1.5 cm. long. 27. *A. setulosa.*

XII. RETROFRACTAE.

Stem-leaves decidedly sagittate at the base.
Plants not densely cespitose; stem mostly solitary (except in *A. lignifera*); biennials.
Pedicels of the fruit merely recurved.
Leaves dentate. 41. *A. consanguinea.*
Leaves entire.
Seeds in one row; pod 3–4 cm. long; sepals stellate. 42. *A. lignifera.*
Seeds in two rows; pod less than 3 cm. long; sepals glabrous. 43. *A. brevisiliqua.*

Pedicels in fruit strictly reflexed.
Seeds in one row; pods 4–7 cm. long.
Petals 6–10 mm. long; stem-leaves usually ample.
Racemes not secund. 44. *A. rhodantha.*
Racemes secund. 45. *A. retrofracta.*
Petals about 5 mm. long; stem-leaves narrow, serrulate. 46. *A. lignipes.*
Seeds in two rows; pod 1.5–3.5 cm. long. 47. *A. caduca.*
Plant densely cespitose; basal leaves linear-oblanceolate; perennials. 48. *A. canescens.*

Stem-leaves scarcely sagittate at the base.
Plant 3 dm. high or more, sparingly stellate; flowers numerous. 49. *A. exilis.*
Plant 1–2 dm. high, densely stellate below; flowers few. 50. *A. pendulocarpa.*

41. PÁRRYA R. Br. 1. *P. platycarpa.*

42. PHOENOCAÙLIS Nutt.

Pod linear-lanceolate, 3–5 mm. wide; seed-coat not cellular. 1. *P. cheiranthoides.*
Pod lanceolate, 7–10 mm. wide; seed-coat cellular. 2. *P. Huddelliana.*

43. CARTIÈRA Greene. 1. *C. cordata.*

44. CAULÁNTHUS S. Wats. WILD CABBAGE.

Stem glabrous; upper leaves reduced.
Stem inflated.
Calyx densely villous. 1. *C. crassicaulis.*
Calyx as well as the whole plant glabrous. 2. *C. glaber.*
Stem not inflated. 3. *C. procerus.*
Stem hirsute, leafy. 4. *C. pilosus.*

45. STREPTANTHÉLLA Rydb. 1. *S. longirostris.*

46. CHLOROCRÁMBE Rydb. 1. *C. hastatus.*

47. SCHOENOCRÁMBE Greene.

Plant tall, 3–6 dm. high, glabrous.
Leaves all linear, entire.
Plant decumbent, slender; pods ascending, more or less arcuate; style about 1 mm. long. 1. *S. decumbens.*
Plant erect, stouter; pods erect or nearly so, straight; style obsolete, 0.5 mm. or less long. 2. *S. linifolia.*
Some of the leaves pinnatifid. 3. *S. pinnata.*
Plant low, 1–2 dm. high, pubescent; leaves pinnatifid. 4. *S. pygmaea.*

48. THELYPODIÓPSIS Rydb.

Stipe very short, less than 1 mm. long or almost none; petals white or tinged with purple.
Style 2 mm. or nearly so.
Pod 7–9 cm. long. 1. *T. elegans.*
Pod about 4 cm. long. 2. *T. Bakeri.*
Style less than 1 mm. long; pod 5–7 cm. long. 3. *T. wyomingensis.*
Stipe 2–5 mm. long; petals and sepals yellow. 4. *T. aurea*

49. HETERÓTHRIX (B. L. Robins.) Rydb. 1. *H. micrantha.*

50. HESPERIDÁNTHUS (B. L. Robins.) Rydb. 1. *H. linearifolium.*

51. THELYPÒDIUM Endl.

Upper leaf-blades auriculate at the base.
Pods 3–5 cm. long.
Petals 6–9 mm. long, about twice as long as the sepals.
Pods 2–3 cm. long; basal leaves oblanceolate or spatulate.
Petals 5–6 mm. long; blades spatulate; pedicels nearly erect. 1. *T. Palmeri.*
Petals 7–9 mm. long; blades obovate; pedicels spreading or ascending. 2. *T. sagittatum.*
Pods 1–2 cm. long; basal leaves oval. 3. *T. ovalifolium.*
Petals 10–15 mm. long, about three times as long as the sepals.
Pods 4–5 cm. long, 1 mm. wide. 4. *T. macropetalum.*
Pods about 3 cm. long, nearly 2 mm. wide. 5. *T. Nuttallii.*
Pods 5–10 cm. long, arcuate, spreading or ascending.
Stem stout; lower leaves coarsely sinuate-dentate; petals obovate, more than 2 mm. wide. 6. *T. ambiguum.*
Stem slender; lower leaves entire or slightly sinuate; petals narrowly spatulate, barely 2 mm. broad. 7. *T. eucosmum.*
Upper leaf-blades attenuate at the base; leaves mostly laciniate.
Petals narrowly linear-oblanceolate.

Pods divergent; raceme lax. 8. *T. leptosepalum.*
Pods erect; raceme dense. 9. *T. milleflorum.*
Petals spatulate; pods reflexed; raceme lax. 10. *T. utahense.*

52. PLEUROPHRÁGMA Rydb.

Pedicels not flattened, about 1 cm. long.
Stipe 0.5–1 mm. long; inflorescence short. 1. *P. integrifolium.*
Stipe 2–3 mm. long; inflorescence elongate. 2. *P. gracilipes.*
Pedicels flattened at the base, about 3 mm. long; stipe 1–2 mm. long. 3. *P. platypodum.*

53. STANLEYÉLLA Rydb. 1. *S. Wrightii.*

54. STANLÈYA Nutt. PRINCE'S PLUME.

Middle cauline leaves sessile by an auriculate base.
Stem winged; petals greenish. 1. *S. viridiflora.*
Stem not winged; petals yellow. 2. *S. confertiflora.*
Middle cauline leaves petioled or sessile with a narrowed base.
Plant white-villous. 3. *S. tomentosa.*
Plant not white-villous.
Blades of the petals linear-oblong to elliptic, bright yellow.
Blades of the petals one-third to two-thirds as long as the claws.
Pod arcuate, not tortuose.
Leaves sparingly hirsute.
Filaments hairy; lower leaves pinnatifid, with lanceolate or oblong lobes. 4. *S. pinnata.*
Filaments glabrous; lower leaves runcinate, with triangular lobes. 5. *S. runcinata.*
Leaves glabrous. 7. *S. glauca.*
Pod decidedly tortuose. 6. *S. bipinnata.*
Blades of the petals as long as the claws.
Leaves glabrous.
Leaves broadly lanceolate, the lower with short broad lobes; blades of the petals oblong; pod ascending. 8. *S. integrifolia.*
Leaves linear-lanceolate, usually all entire; blades of the petals broadly elliptic; pod recurved. 9. *S. arcuata.*
Leaves finely puberulent. 10. *S. canescens.*
Blades of the petals rounded-oval, ochroleucous. 11. *S. albescens.*

FAMILY 53. CAPPARIDACEAE. CAPER FAMILY.

Pods elongate, linear; receptacle with an appendage or gland.
Appendages tubular; petals cuneate-flabelliform, laciniate, very unequal. 1. CRISTATELLA.
Appendages solid; petals entire, emarginate or 3–toothed, but not laciniate.
Stamens 12–32; capsule sessile or short-stipitate. 2. JACKSONIA.
Stamens 6; capsule long-stipitate. 3. PERITOMA.
Pods short; receptacle without appendages.
Pod oblong, flattened parallelly to the replum. 4. CELOME.
Pod broader than long, more or less flattened contrary to the replum. 5. CLEOMELLA.

1. CRISTATÉLLA Nutt. 1. *C. Jamesii.*

2. JACKSÒNIA Raf. CLAMMY-WEED. 1. *J. trachysperma.*

3. PERITÒMA DC. BEE FLOWER, INDIAN PINK, STINK FLOWER.

Petals yellow. 1. *P. luteum.*
Petals purple, pink, or white.
Petals 8–12 mm. long, usually 3–toothed.
Stamens exserted.
Pods 2.5–5 cm. long, broadly linear; calyx-lobes lanceolate to ovate, longer than broad. 2. *P. serrulatum.*
Pods 6–7 cm. long, narrowly linear; calyx-lobes broadly triangular, abruptly acuminate, broader than long. 3. *P. angustum.*
Stamens included. 4. *P. inornatum.*
Petals about 4 mm. long, entire. 5. *P. Sonorae.*

4. CELÒME Greene. 1. *C. platycarpa.*

5. CLEOMÉLLA DC.

Stipe longer than the pod; leaflets linear to oblong.
Seeds rugose or tessellate; leaflets linear; pod rhombic.
Petals 3–5 mm. long; pod about 6 mm. wide; seed transversely rugose. 1. *C. angustifolia.*
Petals 2–3 mm. long; pod 3–4 mm. wide; seed tessellate. 2. *C. plocosperma.*
Seeds smooth and unmarked.
Pod broadly rhombic; leaflets oblong or oblanceolate.
Stem 2–3 dm. high; pod with sharp angles. 3. *C. cornuta.*

Stem less than 1 dm. high; pod with rounded angles. 4. *C. nana.*
Pod ovate; leaflets linear. 5. *C. oocarpa.*
Stipe shorter than the pod; leaflets oval or broadly oblong. 6. *C. Palmerana.*

Family 54. **DROSERACEAE.** Sundew Family.

1. **DRÓSERA** L. Sundew.

Leaf-blades suborbicular or broader than long. 1. *D. rotundifolia.*
Leaf-blades elongate.
Leaf-blades spatulate or oblanceolate; seeds smooth. 2. *D. longifolia.*
Leaf-blades linear or linear-oblanceolate; seeds muricate. 3. *D. linearis.*

Family 55. **CRASSULACEAE.** Stone-crop Family.

Stamens twice as many as the sepals.
Flowers axillary, arranged in elongate racemes or spikes; petals rose-colored, distinct. 1. Clementsia.
Flowers terminal, in cymes or one-side racemes.
Petals more or less united, erect; corolla tubular. 2. Gormania.
Petals distinct.
Flowers polygamous or dioecious; carpels erect; petals in ours purplish. 3. Rhodiola.
Flowers perfect; carpels spreading; petals in ours yellow. 4. Sedum.
Stamens as many as the sepals; minute annual mud or water plants. 5. Tillaeastrum.

1. **CLEMÉNTSIA** Rose. Red Orpine.

1. *C. rhodantha.*

2. **GORMÁNIA** Britton.

1. *G. debilis.*

3. **RHODÌOLA** L. Rose-root, Rose-wort.

Petals acute; follicles 3–5 mm. long, the beak 0.5 mm. long, divergent or recurved; dioecious. 1. *R. integrifolia.*
Petals abruptly acuminate; follicles 6–8 mm. long; the beak 1 mm. long, ascending; polygamo-dioecious. 2. *R. polygama.*

4. **SÈDUM** L. Stone-crop, Orpine.

Leaves linear, linear-oblanceolate, or oblong, terete or nearly so. 1. *S. stenopetalum.*
Leaves lanceolate to oblong or spatulate, more or less flattened.
Leaves of the flowering stems lanceolate, broadest at the base. 2. *S. Douglasii.*
Leaves spatulate or obovate, narrow at the base. 3. *S. Leibergii.*

5. **TILLAEÁSTRUM** Britton.

1. *T. aquaticum.*

Family 56. **PARNASSIACEAE.** Grass of Parnassus Family.

1. **PARNÁSSIA.** Grass of Parnassus.

Petals fimbriate on the sides, at least below; free portions of the staminodia very short and stout; leaf-blades reniform or cordate, usually broader than long.
Petals obovate, 5-nerved; staminodial scales with 5–9 lobes; sepals elliptic. 1. *P. fimbriata.*
Petals oblong, 3-nerved; staminodial scales with 3–5 lobes; sepals narrowly lanceolate. 2. *P. rivularis.*
Petals entire, not fimbriate; free portion of the staminodia long.
Petals 5–9-veined, usually exceeding the sepals; capsule less than twice as long as the sepals; bract some distance from the base.
Staminodia 7–15 in each fascicle; basal leaf-blades cordate or rounded at the base.
Petals nearly twice as long as the sepals; hypanthium inconspicuous; staminodia usually 9–15 in each fascicle. 3. *P. palustris.*
Petals only slightly exceeding the sepals; hypanthium conspicuous, obconic, fully half as long as the sepals and nearly as broad as high; staminodia 7–9 in each fascicle. 4. *P. montanensis.*
Staminodia 5–7 in each fascicle; basal leaf-blades acute at the base. 5. *P. parviflora.*
Petals 3-veined, thin, scarcely equalling the sepals; capsule twice as long as the sepals; bract none or near the base. 6. *P. Kotzebuei.*

Family 57. **SAXIFRAGACEAE.** Saxifrage Family.

Placentae parietal, sometimes nearly basal.
Flowers solitary and axillary to leaf-like bracts, or 2–4 in small corymbs, each subtended by a leaf-like bract; sepals 4; petals wanting. 1. Chrysosplenium.
Flowers in more or less elongate racemes or panicles.
Gynoecium of 2 or 3 equal or essentially equal carpels.

Flower-stalk axial, from a slender bulbiferous rootstock; gynoecium 3-carpellary. 2. LITHOPHRAGMA.
Flower-stalk a lateral shoot from a stout scaly rootstock; gynoecium 2-carpellary.
Inflorescence racemose.
Petals pinnately cleft or pinnatifid.
Hypanthium deeply campanulate or urn-shaped, deeper than the length of the sepals; capsule tapering into a beak. 3. TELLIMA.
Hypanthium saucer-shaped or open campanulate, shallower than the length of the sepals; capsules abruptly beaked or beakless.
Ovary more than half superior; disk inconspicuous; stigmas entire, terminating distinct styles.
Stamens 10; placentae almost basal, bearing few ovules. 4. MITELLA.
Stamens 5; placentae parietal, bearing many ovules. 5. MITELLASTRA.
Ovary wholly inferior, covered with the prominent disk; stigmas sessile, 2-lobed; stamens 5. 6. PECTIANTIA.
Petals entire, toothed or 3-cleft above; stamens 5.
Hypanthium campanulate during anthesis; ovary half inferior. 7. OZOMELIS.
Hypanthium turbinate during anthesis; ovary almost wholly inferior. 8. CONIMITELLA.
Inflorescence paniculate; stamens 5; petals broadened upward. 9. HEUCHERA.
Gynoecium of 2 very unequal carpels. 10. TIARELLA.
Placentae axial.
Hypanthium well-developed, and accrescent, at maturity longer than the sepals.
Stamens 5.
Plants with short bulblet-bearing rootstocks; flower-stalk axial.
Ovary half inferior; blade of the basal leaf ternately divided; stamens borne on the outer edge of a thickened disk. 11. HEMIEVA.
Ovary two-thirds inferior or more; blade of the basal leaf merely crenate; disk obsolete. 12. SUKSDORFIA.
Plants with horizontal rootstocks; flower-stalk a lateral shoot.
Sepals imbricate; petals marcescent; seeds winged. 13. SULLIVANTIA.
Sepals valvate; petals deciduous; seeds wingless. 14. THEROFON.
Stamens 10.
Petals clawed; styles partially united; plants with thick rootstocks. 15. TELESONIX.
Petals clawless; styles distinct; plants with slender rootstocks, often with offsets.
Plants without caudices, producing only annual flowering stems. 16. SAXIFRAGA.
Plants with perennial very leafy caudices, often with offsets, the flowering stems very different from the caudices.
Leaves of the caudex with lobed blades, the margins poreless. 17. MUSCARIA.
Leaves of the caudex with serrate blades, each tooth with an encrusted pore. 18. CHONDROSEA.
Hypanthium only slightly developed, unchanged at maturity, or if slightly accrescent, then flat and plants acaulescent.
Leaves alternate, sometimes all basal.
Plants acaulescent.
Corolla essentially regular, the petals about equal in shape and length. 19. MICRANTHES.
Corolla irregular, except sometimes that of the terminal flower, 3 of the petals with blades of an ovate or lanceolate type and 2 of them narrower and longer. 20. SPATULARIA.
Plants caulescent.
Leaves without stipules.
Carpels distinct; leaf-blades toothed. 21. LEPTARRHENA.
Carpels partially united; leaf-blades entire or rarely with 3 apical tooth-like lobes. 22. LEPTASEA.
Leaves with reniform or orbicular, shallowly lobed blades and wing-like stipules at the base of the petioles. 23. HETERISIA.
Leaves opposite, except sometimes on the flower-stalks. 24. ANTIPHYLLA.

1. CHRYSOSPLÈNIUM (Tourn.) L. GOLDEN SAXIFRAGE, WATER CARPET.

Leaves all alternate; flowers clustered near the ends of the stems; stamens 4. 1. *C. tetrandrum.*
Lower leaves opposite; flowers solitary in the leaf-axils; stamens mostly 8. 2. *C. americanum.*

2. LITHOPHRÁGMA Nutt. STAR-FLOWER, PRAIRIE STAR, WOODLAND STAR.

Hypanthium campanulate or hemispheric, mostly rounded at the base, adnate only to the base of the ovary.

Stem-leaves seldom bulbiferous in the axils; stipules long and narrow, the free portion triangular or lanceolate, not fimbriate.
Hypanthium with the sepals 2–3 mm. long; petals about 2 mm. long.
Pedicels short, in fruit not exceeding the capsule in length; seeds smooth. 1. *L. tenella.*
Pedicels in fruit much longer than the capsule; seeds muriculate. 2. *L. glabra.*
Hypanthium with the sepals 3–4 mm. long; petals 3–5 mm. long. 3. *L. australis.*
Stem-leaves usually bulbiferous in their axils; stipules short and broad, the free portion rounded and fimbriate. 4. *L. bulbifera.*
Hypanthium deeply obconic, adnate to the lower half of the ovary. 5. *L. parviflora.*

3. TELLÌMA R. Br. 1. *T. grandiflora.*

4. MITÉLLA (Tourn.) L. MITERWORT, BISHOP'S CAP. 1. *M. nuda.*

5. MITELLÁSTRA (T. & G.) Howell. 1. *M. caulescens.*

6. PECTIÁNTHIA Raf.

Stamens opposite to the petals. 1. *P. pentandra.*
Stamens opposite to the sepals. 2. *P. Breweri.*

7. OZOMÈLIS Raf. MITREWORT.

Midvein of the sepals branched; side-veins simple; petals cuneate or oblanceolate, with lanceolate lobes or entire.
Petals cuneate, about twice as long as the sepals, 3-fid with subequal divisions. 1. *O. trifida.*
Petals oblanceolate, slightly exceeding the sepals, entire or slightly and unequally toothed. 2. *O. violacea.*
Midveins of the sepals simple; lateral veins branched; petals filiform or 3-fid, with filiform divisions, 1-neved.
Petals 3-fid to the middle; hypanthium with the sepals 4–5 mm. long. 3. *O. stauropetala.*
Petals entire or 3-fid only at the apex; hypanthium with the sepals 1.5–3 mm. long.
Hypanthium with sepals 2–3 mm. long; leaf-blades indistinctly lobed and with shallow crenulations; petals often entire. 4. *O. stenopetala.*
Hypanthium with the sepals 1.5–2 mm. long; leaf-blades distinctly lobed and deeply crenate; petals 3–cleft. 5. *O. Parryi.*

8. CONIMITÉLLA Rydb. 1. *C. Williamsii.*

9. HEÙCHERA L. ALUM-ROOT, KALISPELL.

Stamens equalling or exceeding the sepals.
Panicle open, not spike-like.
Hypanthium turbinate, about as broad as long; stamens at least twice as long as the sepals. 1. *H. glabra.*
Hypanthium deeply campanulate or urceolate, about twice as long as broad; stamens slightly exceeding the sepals.
Hypanthium strongly oblique.
Hypanthium with the sepals more than 1 cm. long; petioles glabrous or sparingly short-hairy. 2. *H. Richardsonii.*
Hypanthium with the sepals less than 1 cm. long; petioles long-hispid. 3. *H. hispida.*
Hypanthium not strongly oblique. 4. *H. rubescens.*
Panicle contracted, dense, spike-like. 5. *H. bracteata.*
Stamens shorter than the sepals.
Hypanthium short-campanulate to saucer-shaped, together with the sepals 3–5 mm. long.
Petioles more or less hirsute. 6. *H. novomexicana.*
Petioles glabrous or puberulent.
Hypanthium campanulate, yellowish or pinkish; sepals almost erect.
Leaf-blades deeply lobed; lobes again lobed and toothed; petals narrowly oblanceolate, nearly twice as long as the sepals. 7. *H. gracilis.*
Leaf-blades merely once 5–7–lobed and toothed; petals spatulate, from equalling to half longer than the sepals.
Base of the leaf-blades with an open sinus, or almost cuneate; plant 1–3 dm. high. 8. *H. Hallii.*
Base of the leaf-blades with a narrow sinus; plant 3–5 dm. high. 9. *H. grossulariifolia.*
Hypanthium saucer-shaped; sepals spreading.
Hypanthium with the sepals 4 mm. high, yellowish; blades of the petals rhombic. 10. *H. flavescens.*
Hypanthium with the sepals 2–3 mm. high, greenish; petals oblanceolate or spatulate.
Leaf-blades with shallow lobes.
Sinus of the leaf-blades closed, the basal lobes often overlapping; petals not exceeding the sepals. 11. *H. utahensis.*

Sinus of the leaf-blades open; petals exceeding the sepals. 12. *H. parvifolia.*
Leaf-blades cleft at least one-half to the base. 13. *H. flabellifolia.*
Hypanthium deeply campanulate or urceolate, with the sepals 5–10 mm. long.
Flowering branches and petioles pubescent.
Flowers greenish; leaf-blades reniform or rounded, deeply cordate at the base lobes and teeth rounded; petioles long-hairy. 14. *H. chlorantha.*
Flowers yellowish; leaf-blades broadly oval to orbicular, truncate or slightly cordate at the base.
Leaf-blades thick, densely glandular-pubescent, 1.5–4 cm. wide, rarely cordate at the base. 15. *H. ovalifolia.*
Leaf-blades thin, glabrous, or hairy only on the veins, 3–6 cm. wide, cordate at the base. 16. *H. cylindrica.*
Flowering branches and petioles glabrous or finely puberulent.
Flowers yellowish; leaf-blades rounded-oval to orbicular, truncate or slightly cordate at the base, only the earliest reniform. 17. *H. glabella.*
Flowers greenish; leaf-blades thin, reniform or rarely rounded, with deeply cordate base. 18. *H. tenuifolia.*

10. TIARÉLLA L. False Miterwort. 1. *T. unifoliata.*

11. HEMIÈVA Raf. 1. *H. ranunculifolia.*

12. SUKSDÓRFIA A. Gray. 1. *S. violacea.*

13. SULLIVÁNTIA T. & G. 1. *S. Hapemanii.*

14. THÉROPHON Raf. 1. *T. majus.*

15. TELESÒNIX Raf.

Petals twice as long as the sepals; blades almost orbicular; beaks of the pistils united almost to the top. 1. *T. Jamesii.*
Petals equalling or slightly exceeding the sepals; blades obovate-spatulate; beaks of the pistils united halfway up. 2. *T. heucheriformis.*

16. SAXÍFRAGA (Tourn.) L. Saxifrage.

Flowers normal, none of them represented by clusters of bulblets.
Petals not abruptly narrowed into claws; leaf-blades thick, the lower ones mainly 3–lobed. 1. *S. rivularis.*
Petals abruptly narrowed into claws; leaf-blades thin, the lower ones 5–7-lobed. 2. *S. debilis.*
Flowers below the terminal one replaced by clusters of bulblets.
Lobes of the stem-leaves linear to triangular-lanceolate; petals cuneate. 3. *S. cernua.*
Lobes of the stem-leaves broad and rounded, as broad as long or broader; petals fiddle-shaped. 4. *S. simulata.*

17. MUSCÀRIA Haw. Saxifrage.

Leaves of the caudex with entire or slightly 3–toothed blades. 1. *M. adscendens.*
Leaves of the caudex with 3–cleft or prominently 3–lobed blades.
Petals less than 2 mm. long. 2. *M. micropetala.*
Petals over 2 mm. long.
Petals 2.5–3.5 mm. long. 3. *M. delicatula.*
Petals 4.5–7 mm. long.
Sepals oblong-lanceolate to triangular-lanceolate; hypanthium turbinate during anthesis. 4. *M. monticola.*
Sepals broadly ovate to half-orbicular; hypanthium campanulate during anthesis. 5. *M. caespitosa.*

18. CHONDRÒSEA Haw. 1. *C. Aizoon.*

19. MICRÁNTHES Haw. Saxifrage.

Filaments subulate or filiform-subulate, or sometimes narrowly linear.
Cymules wholly or mainly aggregate into a head or spike, 1 or 2 lower ones sometimes remote or peduncled.
Petals shorter than the sepals or about equalling them.
Lower cymules sessile; petals about equalling the sepals. 1. *M. Rydbergii.*
Lower cymules peduncled; petals shorter than the sepals.
Petals obovate to oval or orbicular-oval. 2. *M. crenatifolia.*
Petals oblong to cuneate. 3. *M. columbiana.*
Petals larger than the sepals.
Sepals ovate to triangular. 4. *M. rhomboidea.*
Sepals oval, rounded at the apex. 5. *M. austrina.*
Cymules in narrow pyramidal panicles.
Corolla present.
Petals white.
Leaves with blades narrowed into petiole-like bases. 6. *M. Greenei.*
Leaves without petiole-like bases.

Panicle wide; peduncles of the lower cymules elongate.
Petals with claw-like bases. 7. *M. arnoglossa.*
Petals without claw-like bases. 8. *M. oregana.*
Panicle narrow; peduncles permanently very short. 9. *M. brachypus.*
Petals greenish. 10. *M. montanensis.*
Corolla wanting or obsolete. 11. *M. subapetala.*
Filaments clavate or spatulate.
Leaf-blades flabellate. 12. *M. Lyallii.*
Leaf-blades ovate, oval, broadly oblong, or orbicular.
Leaf-blades narrowed at the base, neither cordate nor of an orbicular type.
Cymules permanently compact. 13. *M. occidentalis.*
Cymules lax and open. 14. *M. saximontana.*
Leaf-blades orbicular or nearly so.
Petals with elliptic-oblong or ovate blades, the claws stout. 15. *M. aestivalis.*
Petals with suborbicular or reniform blades, the claws slender. 16. *M. arguta.*

20. **SPATULÀRIA** Haw. Saxifrage.

Inflorescence with bulblets.
Plants with all the flowers represented by clusters of bulblets, or with a single flower terminating the main axis. 1. *S. Vreelandii.*
Plants with many flowers and some bulblets, at least with a flower terminating each branch of the stem. 2. *S. Brunoniana.*
Inflorescence without bulblets. 3. *S. ferruginea.*

21. **LEPTARRHÈNIA** R. Br. 1. *L. pyrolifolia.*

23. **LEPTÁSEA** Haw. Yellow Saxifrage, Spotted Saxifrage.

Leaf-blades not spine-tipped at the apex, more or less ciliate.
Petals suborbicular or oval, 5.5–7 mm. long, each abruptly narrowed into a short claw; plant less than 6 cm. high. 1. *L. chrysantha.*
Petals elliptic to oblong, 9–13 mm. long, clawless; plant more than 6 cm. high. 2. *L. Hirculus.*
Leaf-blades spine-tipped at the apex.
Petals oblong, oblong-lanceolate, oval, or elliptic; plants without runners.
Leaf-blades entire, with a single spine at the apex.
Leaf-blades not ciliate, fleshy; flower-stalks bearing larger leaves than the caudices. 3. *L. Van-Bruntiae.*
Leaf-blades ciliate, parchment-like; flower-stalks bearing smaller leaves than the caudices. 4. *L. austromontana.*
Leaf-blades 3–toothed at the apex, the teeth spine-tipped. 5. *L. tricuspidata.*
Petals broadly obovate; plants with runners producing an offset at the end. 6. *L. flagillaris.*

23. **HETERÍSIA** Raf. 1. *H. Mertensiana.*

24. **ANTIPHÝLLA** Haw. Purple or Mountain Saxifrage.

1. *A. oppositifolia.*

Family 58. **HYDRANGEACEAE.** Hydrangea Family.

Capsule obovoid or obconic, the beaks rising abruptly from the body. 1. Philadelphus.
Capsule conic or ovoid, the beaks tapering gradually from the body.
Filaments and anthers unappendaged; sepals and petals 5.
Leaf-blades toothed; hypanthium short during anthesis. 2. Edwinia.
Leaf-blades entire; hypanthium long during anthesis. 3. Fendlerella.
Filaments appendaged under the anthers; anthers appendaged at the top; sepals and petals 4. 4. Fendlera.

1. **PHILADÉLPHUS** L. Mock Orange, Syringa.

Leaf-blades thin, not leathery, usually toothed or denticulate, more than 3 cm. long; flowers several.
Petals ovate-lanceolate, acute or obtuse at the apex. 1. *P. Helleri*
Petals oblong to rounded-oval; rounded at the apex.
Leaf-blades 3–5-ribbed, the lateral ribs or if 5–ribbed the second or stronger pair meeting the midrib some distance from the base of the blade.
Bark of the second season red or chestnut-brown, with conspicuous cross-cracks, at last peeling off. 2. *P. Lewisii.*
Bark of the second season gray or yellowish, neither cross-cracked nor peeling off. 3. *P. columbianus.*
Leaf-blades 5–ribbed, all ribs originating at the base of the blade. 4. *P. Gordonianus.*
Leaf-blades small, 0.5–2 cm. long, entire; flowers mostly solitary.
Hypanthium 4–5 mm. high. 5. *P. microphyllus.*
Hypanthium about 2 mm. high, or in fruit 3–4 mm. high.
Styles wholly united or nearly so; stigmas sometimes also partly united. 6. *P. occidentalis.*
Styles distinct for at least half their length; stigmas distinct. 7. *P. minutus.*

2. EDWÍNIA Heller.

Sepals slightly longer than the hypanthium at maturity. 1. *E. americana.*
Sepals several times longer than the hypanthium at maturity. 2. *E. macrocalyx.*

3. FENDLERÉLLA Heller. 1. *F. utahensis.*

4. FÉNDLERA Engelm. & Gray.

Hypanthium and lower surface of the leaves strigose, the upper surface hispidulous. 1. *F. tomentella.*
Hypanthium and leaves sparingly strigose or glabrous. 2. *F. falcata.*

FAMILY 59. GROSSULARIACEAE. GOOSEBERRY FAMILY.

Leaf-blades plicate (folded like a fan) in vernation; flowers regular; style not inclined.
  Plant armed with nodal spines and usually also bristly.
    Pedicels not jointed near the flowers; bractlets if present enclosed in the bract; hypanthium-tube well developed, deeply campanulate to cylindric. 1. GROSSULARIA.
    Pedicels jointed below the short stipe-like base of the flower, bearing the bractlets just below the node; hypanthium-tube short, saucer-shaped. 2. LIMNOBOTRYA.
  Plant unarmed; pedicels jointed just under the flowers; bractlets if present borne just under the node. 3. RIBES.
Leaf-blades convolute (rolled in) in vernation; flowers slightly irregular; styles somewhat declined. 4. CHRYSOBOTRYA.

1. GROSSULÀRIA (Tourn.) Mill. GOOSEBERRIES.

Sepals white; filaments more than twice as long as the petals; style pubescent below.
  Filaments and anthers glabrous; ribs of the leaves distinct to the base. 1. *G. missouriensis.*
  Filaments and usually also the anthers hairy; ribs of the leaves united at the base on the lower surface. 2. *G. nivea.*
Sepals mostly green or purplish; filaments not more than twice as long as the petals.
  Tube of the hypanthium externally glabrous; styles hairy towards the base.
    Hypanthium-tube cylindric, usually longer than the sepals. 3. *G. setosa.*
    Hypanthium-tube campanulate or turbinate, not longer than the sepals.
      Stamens equalling the petals.
        Peduncles well exserted from the bud-scales; hypanthium and sepals together 8–10 mm. long. 4. *G. irrigua.*
        Peduncles and pedicels together scarcely longer than the bud-scales; hypanthium and calyx together 5–7 mm. long. 5. *G. oxyacanthoides.*
      Stamens about twice as long as the petals.
        Peduncles glabrous; bracts glabrous. 6. *G. inermis.*
        Peduncles puberulent and often glandular; bracts pubescent and glandular-ciliate. 7. *G. Purpusi.*
  Tube of the hypanthium pubescent; styles wholly glabrous; stamens about equalling the petals.
    Length of the flowers 8 mm. or more; tube of the hypanthium cylindric, not shorter than the sepals. 8. *G. leptantha.*
    Length of the flower 7 mm. or less; tube of the hypanthium campanulate, shorter than the sepals. 9. *G. velutina.*

2. LIMNOBÒTRYA Rydb. SWAMP CURRANTS.

Leaves glabrous or nearly so; fruit black.
  Lobes of the leaves acute, incised, the terminal one decidedly longer; basal sinus open; stem usually densely bristly.
    Nodal spines scarcely stronger than the bristles; stipitate base of the flowers almost obsolete; peduncle and ovary densely glandular and the former also finely villous. 1. *L. lacustris.*
    Nodal spines usually much stronger than the bristles; stipe-like base of the flowers evident, 0.5–1 mm. long; peduncles and ovary sparingly glandular, but not at all villous. 2. *L. echinata.*
  Lobes of the leaves obtusish, toothed, the terminal one scarcely longer; basal sinus usually narrow; stem except in depauperate forms usually only slightly bristly; stipe-like base of the flower about 0.5 mm. long; peduncles glandular and sometimes puberulent. 3. *L. parvula.*
Leaves pubescent and glandular on both sides; fruit bright red. 4. *L. montigena.*

3. RÌBES L. CURRANTS.

Hypanthium-tube rather poorly developed, saucer-shaped or open-campanulate.
  Berry not glandular-hispid.
    Berry red, without glands; racemes drooping; bracts short-ovate. 1. *R. triste.*
    Berry black, with sessile glands; racemes erect; bracts subulate-linear.
      Racemes 6–12-flowered; bracts 2–5 mm. long; leaves firm, villous-pubescent beneath, with a shallow or no basal sinus. 2. *R. hudsonianum.*
      Racemes 25–50-flowered; bracts minute, 1–2 mm. long; leaves thin, essentially glabrous, usually with a deep basal sinus. 3. *R. petiolare.*

Berry glandular-hispid.
Berry red; sepals 2–2.5 mm. long, glabrous without. 4. *R. glandulosum.*
Berry black or dark-purple; sepals 3–4 mm. long, hairy without.
Sepals without gland-hairs; berry with a bloom. 5. *R. laxiflorum.*
Sepals with gland-hairs; berry without a bloom. 6. *R. coloradense.*
Hypanthium-tube well developed, deeply campanulate to tubular.
Fruit glabrous, black. 7. *R. americanum.*
Fruit glandular-hispid.
Hypanthium-tube campanulate or urceolate; fruit black or blue.
Leaves glabrous or essentially so; fruit globose, with a bloom.
Hypanthium-tube greenish white, about 1 mm. long, less than half as long as the sepals. 8. *R. Wolfii.*
Hypanthium-tube rose-colored or purplish, about 2 mm. long, more than half as long as the sepals. 9. *R. nevadense.*
Leaves pubescent and usually very glandular; fruit ellipsoid, without a bloom. 10. *R. viscosissimum.*
Hypanthium-tube cylindric; fruit red.
Leaves merely glandular-pruinose, not hairy; flowers whitish. 11. *R. reniforme.*
Leaves decidedly pubescent as well as glandular.
Bracts cuneate-obovate, the rounded or truncate summit several lobed; flowers whitish; styles pubescent. 12. *R. cereum.*
Bracts oblong or rhombic, entire or glandular-dentate; flowers pinkish; styles glabrous. 13. *R. inebrians.*

4. CHRYSOBÒTRYA Spach. Flowering, Golden, Missouri, or Buffalo Currants.

Sepals less than half as long as the hypanthium-tube. 1. *C. odorata.*
Sepals more than half as long as the hypanthium-tube. 2. *C. aurea.*

Family 60. **ROSACEAE.** Rose Family.

A. Fruit consisting of 1–5 dehiscent follicles.
Carpels alternate with the sepals, or less in number; stipules none or deciduous.
Carpels 1–5, if more than one more or less united below; seeds shining, pear-shaped, with a bony coat; endosperm present. 1. Opulaster.
Carpels usually 5, distinct; seeds dull, linear or linear-lanceolate, with a thin coat; endosperm lacking.
Stamens inserted on the margin of the hypanthium; flowers perfect; shrubs or undershrubs with simple leaves.
Filaments free; leaves entire or toothed.
Carpels dehiscent on the ventral suture; shrubs with deciduous leaves. 2. Spiraea.
Carpels dehiscent on both sutures; cespitose tufted undershrubs with persistent leaves.
Flowers racemose, rarely somewhat paniculate; stamens 20. 3. Petrophytum.
Flowers solitary, nearly sessile at the ends of the short branches; stamens 10. 4. Kelseya.
Filaments united at the base; leaves twice or thrice 3–cleft. 5. Luetkea.
Stamens inserted on the inside of the hypanthium; flowers dioecious; tall herbs with twice or thrice compound leaves. 6. Aruncus.
Carpels opposite to the sepals; stipules present, persistent; leaves pinnately dissected. 7. Chamaebatiaria.

B. Fruits consisting of indehiscent achenes or drupelets.
I. Carpels not enclosed in a fleshy hypanthium.
a. Fruits of dry achenes.
1. Ovules 2, one above the other; achenes usually 1–seeded and more or less flattened, arranged in a single circle; shrubs with simple leaves. 8. Sericotheca.
2. Ovules and seeds solitary; achenes usually turgid and, if many, spirally arranged.
a. Seeds inserted at the distal end of the ovary, *i. e.*, opposite the origin of the style, pendulous or in genera with basal styles ascending; radicle superior.
Disk at the mouth of the hypanthium annular or obsolete; leaves and branches alternate.
Style articulated to the ovary; hypanthium from campanulate to almost flat, neither contracted at the throat nor closely investing the achenes; flowers cymose or solitary.
Style not basal.
Style terminal or nearly so; ovules pendulous and anatropous.
Stamens separated from the receptacle by an open space; no indication of an annular thickening at the base of the filaments.
Hypanthium saucer-shaped to deeply campanulate; petals oblanceolate to obcordate or cuneate; pistils usually more than 2.
Filaments dilated, petaloid. 9. Horkelia.
Filaments filiform. 10. Ivesia.

Hypanthium wheel-shaped; petals narrowly linear; pistils 2. 11. COMARELLA.
Stamens inserted very near the base of the receptacle on a more or less evident annular thickening. 12. POTENTILLA.
Style lateral; ovules ascending and amphitropous.
Achenes glabrous; herbs.
Achenes numerous; stamens about 20.
Leaves odd-pinnate.
Receptacle not enlarged in fruit; petals yellow, obtuse or retuse; leaves interruptedly pinnate. 13. ARGENTINA.
Receptacle somewhat enlarged in fruit, becoming spongy; petals red, acute or acuminate; leaves regularly pinnate. 14. COMARUM.
Leaves trifoliolate; receptacle much enlarged and usually red in fruit, pulpy; petals white or pinkish. 15. FRAGARIA.
Achenes 10–15; stamens 5; leaves trifoliolate. 16. SIBBALDIA.
Achenes hairy; shrubs; style club-shaped; leaves pinnate; petals (in ours) yellow. 17. DASIPHORA.
Style nearly basal; ovules ascending or nearly erect, orthotropous.
Stamens and pistils numerous; bractlets present; leaves pinnate. 18. DRYMOCALLIS.
Stamens 5; bractlets wanting; leaves twice or thrice ternate. 19. CHAMAERHODOS.
Style not articulate to the ovary; inflorescence spicate, racemose or paniculate; hypanthium indurate, closely investing the achenes in fruit.
Hypanthium not prickly; petals lacking.
Perennials, with rootstocks; stigmas muricate-papillose; leaflets toothed. 20. SANGUISORBA.
Annuals or biennials, with taproots; stigmas brush-like; leaflets pectinate-pinnatifid. 21. POTERIDIUM.
Hypanthium prickly; petals present; prickles of the hypanthium hooked. 22. AGRIMONIA.
Disk at the mouth of the hypanthium produced into a cylindric tube, separating the stamens from the pistils; shrubs with opposite leaves and branches. 23. COLEOGYNE.
b. Seeds inserted at the proximal end of the ovary, *i. e.*, perfectly basal; radicle inferior.
Styles wholly deciduous. 24. WALDSTEINIA.
Styles partly or wholly persistent.
Hypanthium hemispheric, campanulate or turbinate, persistent.
Pistils several or many.
Flowers 8–10-merous; low depressed undershrubs with crenate or entire leaf-blades. 25. DRYAS.
Flower usually 5-merous.
Sepals valvate; perennial herbs, with rootstocks; leaves pinnate; bractlets present.
Style conspicuously bent and distinctly geniculate above, the upper hairy portion readily deciduous. 26. GEUM.
Style neither conspicuously bent nor distinctly geniculate, the upper glabrous portion persistent or tardily deciduous.
Styles conspicuously elongating in fruit, plumose below. 27. SIEVERSIA.
Styles not much elongating in fruit, not plumose. 28. ACOMASTYLIS.
Sepals imbricate in bud; shrubs; leaves dissected into narrow lobes.
Bractlets present; pistils numerous. 29. FALLUGIA.
Bractlets wanting; pistils few. 30. COWANIA.
Pistils usually solitary; shrubs with 3-cleft leaves. 31. PURSHIA.
Hypanthium salver-shaped, the limb deciduous; the tube persistent and closely investing the fruit; shrubs. 32. CERCOCARPUS.
b. Fruits of more or less fleshy drupelets; ovules 2, collateral.
Styles club-shaped; stigmas slightly 2-lobed; receptacle flat; unarmed shrubs with exfoliating bark and simply digitately ribbed and lobed leaves.
Drupelets capped by a hard pubescent cushion; styles glabrous. 33. RUBACER.
Drupelets without cushion; styles hairy. 34. OREOBATUS.
Styles filiform, glabrous; stigmas capitate; receptacle convex, hemispheric or nipple-shaped; drupelets without cushion; leaves in most species compound and stem prickly or bristly. 35. RUBUS.
II. Carpels enclosed in the hypanthium which becomes fleshy in fruit. 36. ROSA.

1. OPULÁSTER Medic. NINE-BARK.

Carpels 3–5, united only at the base, turgid.
Mature carpels glabrous, ovate, usually 5; leaves of the sterile shoots scarcely longer than broad. 1. *O. capitatus.*
Mature carpels stellate, short-ellipsoid, abruptly acute, usually 3 or 4.
Leaf-blades deeply lobed, as broad as long, cordate at the base; western species. 2. *O. cordatus.*
Leaf-blades shallowly round-lobed, not cordate at the base, usually longer than broad; eastern species. 3. *O. intermedius.*
Carpels 2, united half their length, or only 1.
Carpels usually 2; stamens similar or nearly so.
Mature carpels more or less turgid; styles more or less spreading.
Bracts obovate or spatulate, often foliaceous and more or less persistent. 4. *O. bracteatus.*
Bracts linear or linear-oblanceolate, membranous and caducous.
Pedicels and the hypanthium almost glabrous; sepals stellate only on the inner surface and near the margin; shrub 1 m. high or more. 5. *O. glabratus.*
Pedicels, hypanthium and calyx densely stellate; shrub 0.5 m. high or less.
Leaves green on both sides, almost glabrous. 6. *O. monogynus.*
Leaves paler and densely stellate beneath. 7. *O. Hapemanii.*
Mature carpels flattened and decidedly keeled; styles erect. 8. *O. malvaceus.*
Carpels usually solitary; every other filament longer and with more dilated base; leaves small, finely stellate. 9. *O. alternans.*

2. SPIRAÈA L. MEADOW SWEET.

Panicle flat-topped; sepals erect or merely spreading.
Petals pink or rose-colored; corymb small. 1. *S. densiflora.*
Petals white, seldom tinged with rose; corymb larger. 2. *S. lucida.*
Panicle elongate, conical or ovoid, or lanceolate.
Sepals merely spreading; disk obsolete.
Inflorescence glabrous; leaf-blades broadly oblanceolate to obovate. 3. *S. latifolia.*
Inflorescence pubescent; leaf-blades narrowly oblanceolate. 4. *S. alba.*
Sepals soon reflexed; disk usually rather conspicuous.
Leaves not tomentose beneath.
Stem glabrous; leaves serrate to near the base. 5. *S. idahoensis.*
Stem more or less pubescent; leaves toothed above the middle. 6. *S. Menziesii.*
Leaves tomentose beneath. 7. *S. Douglasii.*

3. PETRÓPHYTUM (Nutt.) Rydb.

Leaves spatulate, spreading; racemes short, 1–4 cm. long; bracts usually shorter than the flowers. 1. *P. caespitosum.*
Leaves narrowly oblanceolate, erect or ascending; inflorescence 4–10 cm. long, often branched; bracts usually exceeding the flowers. 2. *P. elatius.*

4. KELSÈYA (S. Wats.) Rydb. 1. *K. uniflora.*

5. LUÈTKEA Bong. 1. *L. pectinata.*

6. ARÚNCUS (L.) Adans. GOAT'S BEARD. 1. *A. acuminatus.*

7. CHAMAEBATIÀRIA (Porter) Maxim. FERN-BUSH. 1. *C. Millefolium.*

8. SERICOTHÈCA Raf. OCEAN SPRAY, MOUNTAIN SPRAY.

Leaves grayish- or whitish-tomentose and villous beneath.
Inflorescence ample, well-compound; leaves usually over 3 cm. long.
Leaf-blades abruptly contracted below, scarcely decurrent on the petioles, 4–10 cm. long. 1. *S. discolor.*
Leaf-blades cuneate at the base and distinctly decurrent on the winged petioles, 2–5 cm. long. 2. *S. dumosa.*
Inflorescence small and narrow, simple, racemose, or with a few short, spreading branches; leaves usually less than 2 cm. long, finely pubescent and green above, white silky-villous and tomentose beneath. 3. *S. microphylla.*
Leaves glandular-atomiferous and slightly hairy on the veins beneath, not at all tomentose, 1–1.5 cm. long, glabrous or sparingly pubescent. 4. *S. glabrescens.*

9. HORKÈLIA Cham. & Schlecht.

Plant less than 3 dm. high; petals 2–3 mm. long. 1. *H. parviflora.*
Plant more than 3 dm. high; petals 3–6 mm. long.
Leaflets ovate or oval, 2–3 cm. long; bracts generally exceeding the inflorescence. 2. *H. capitata.*
Leaflets obovate or cuneate, usually less than 2 cm. long; bracts shorter than the inflorescence. 3. *H. fusca.*

10. IVÈSIA T. & G.

Leaflets numerous, more or less crowded, usually divided to near the base.
Stem leafy; stamens 20; claws of the white petals obsolete. 1. *I. Kingii.*

Stem few-leaved or scapiform; stamens 5; petals yellow or yellowish, clawed.
Cyme corymbiform; hypanthium cup-shaped.
Bractlets linear; stem decumbent. 2. *I. utahensis.*
Bractlets oblong or lanceolate; stem erect. 3. *I. mutabilis.*
Cyme subcapitate; hypanthium campanulate. 4. *I. Gordonii.*
Leaflets comparatively few, obovate, merely incised. 5. *I. beneolens.*

11. COMARÉLLA Rydb. 1. *C. sabulosa.*

12. POTENTÍLLA L. CINQUEFOIL, FIVE-FINGER.

Cymes very leafy, many-flowered; annuals or biennials, rarely short-lived perennials; styles fusiform and glandular at the base. I. SUPINAE.
Cymes not very leafy, generally rather few-flowered; perennials with rootstocks.
Leaves digitate.
Basal leaves 5–9-foliolate.
Basal leaves without an additional pair of leaflets on the petioles.
Plants more than 2 dm. high.
Leaves green on both sides, sparingly hairy, not at all tomentose. II. NUTTALLIANAE.
Leaves either densely hairy or more or less tomentose beneath.
Leaflets merely crenate or cut-toothed, the toothing not extending half-way to the midrib.
Leaflets densely pubescent beneath, if at all tomentose, the tomentum hidden under the long hairs, green and sparingly pubescent on the upper side. II. NUTTALLIANAE.
Leaflets principally tomentose beneath, only slightly hairy. V. GRACILES.
Leaflets cleft more than half-way to the midrib into linear, oblong, or lance-oblong divisions.
Stems ascending or decumbent at the base; stem-leaves few, reduced, with 3–5 leaflets. III. CANDIDAE.
Stems leafy; most of the stem-leaves 7-foliolate. IV. PECTINISECTAE.
Plants less than 2 dm. high.
Leaves neither tomentose nor silky, green. VII. AUREAE.
Leaves tomentose or silky, at least beneath. VIII. CONCINNAE.
Basal leaves digitately 5-foliolate, with an additional pair of smaller leaflets on the petiole. VI. SUBJUGAE.
Basal leaves 3-foliolate.
Leaves more or less tomentose beneath. IX. NIVEAE.
Leaves not tomentose. X. FRIGIDAE.
Leaves odd-pinnate.
Style much longer than the mature achene, filiform.
Leaves with 1–3 more or less approximate pairs of leaflets; plants low.
Leaves not at all tomentose.
Style subterminal. VII. AUREAE.
Style attached below the apex of the achene. XI. BREVIFOLIAE.
Leaves more or less tomentose beneath. XII. RUBRICAULES.
Leaves with 3–13 pairs of leaflets; plants usually comparatively tall.
Leaves grayish or whitish, silky or tomentose, at least beneath. XIII. LEUCOPHYLLAE.
Leaves green on both sides or merely strigose. XIV. MULTIJUGAE.
Style not longer than the mature achene, thickened and glandular below; leaves usually more or less tomentose beneath. XV. MULTIFIDAE.

I. SUPINAE.

Achenes with a corky gibbosity on the upper suture; leaves all pinnate with 3–5 pairs of leaflets. 1. *P. paradoxa.*
Achenes not gibbous.
Lower leaves pinnate with 2 approximate pairs of leaflets, the upper ternate; stem strict; inflorescence cymose. 2. *P. rivalis.*
Leaves all digitate; the basal ones rarely pinnate in *P. monspeliensis.*
Leaves ternate.
Petals about half as long as the sepals; achenes whitish, smooth; hypanthium in fruit 5 mm. wide or less.
Stem slender; petals cuneate or obovate; sepals and bractlets 3–4 mm. long.
Stem with diffuse, spreading branches; leaflets cuneate; inflorescence cymose. 3. *P. millegrana.*
Stem with erect or strongly ascending branches; inflorescence inclined to be falsely racemose; leaflets broadly obovate; plant decidedly glandular-puberulent. 4. *P. biennis.*
Stem stout; petals obcordate; sepals and bractlets 5 mm. long; plants densely glandular. 5. *P. Kelseyi.*
Petals equalling the sepals or nearly so; hypanthium in fruit about 7 mm. wide; stamens 15–20. 6. *P. monspeliensis.*
Lower leaves digitately 5–foliolate, or ternate with the lateral leaflets 2–cleft to near the base; stamens 5. 7. *P. pentandra.*

II. NUTTALLIANAE.

Calyx and leaves more or less glandular-atomiferous; whole plant yellowish or brownish green; leaves with strong ribs.

Leaflets dissected into linear or oblong divisions. 8. *P. brunnescens.*
Leaflets coarsely toothed with lanceolate teeth. 9. *P. Nuttallii.*
Calyx and leaves not glandular-atomiferous; plant neither yellowish nor brownish; ribs of the leaves not prominent.
Pubescence of the stem and petioles appressed.
Leaflets coarsely toothed.
Leaflets obovate or oblanceolate, toothed to near the base. 10. *P. jucunda.*
Leaflets cuneate-obovate, the middle ones mostly toothed above the middle, entire at the base. 31. *P. glaucophylla.*
Leaflets dissected at least half-way to the midrib.
Leaves rather densely silky beneath. 11. *P. rectiformis.*
Leaves glabrous except the veins. 12. *P. glabrata.*
Pubescence of the stem and petioles spreading; leaflets loosely hairy, often slightly tomentose beneath. 13. *P. dascia.*

III. CANDIDAE.

Segments of the leaflets lanceolate, acute; tomentum sparse. 22. *P. viridescens.*
Segments of the leaflets oblong to linear, obtusish; tomentum dense.
Pubescence of the petioles and stems appressed.
Leaves densely yellowish silky above, snow-white, tomentose and silky beneath. 14. *P. candida.*
Leaves green and sparingly silky above, tomentose, but neither snow-white nor silky beneath. 15. *P. Pecten.*
Pubescence of the petioles and stem spreading. 16. *P. Bakeri.*

IV. PECTINISECTAE.

Leaves green, finely silky beneath, slightly if at all tomentose. 17. *P. pectinisecta.*
Leaves white-tomentose beneath.
Divisions of the leaflets scarcely revolute; petals 7–10 mm. long.
Leaves loosely villous-tomentose above. 18. *P. longiloba.*
Leaves appressed-silky above. 19. *P. Blaschkeana.*
Divisions of the leaflets narrowly linear, revolute; petals 5–7 mm. long. 20. *P. flabelliformis.*

V. GRACILES.

Leaflets cut-toothed or cleft with lanceolate teeth.
Leaflets with a cuneate entire base; tomentum sparse. 21. *P. intermittens.*
Leaflets toothed or cleft along their whole margins.
Petioles with appressed or ascending hairs.
Stem slender, 3–5 dm. high; inflorescence open, scarcely leafy. 22. *P. viridescens.*
Stem stout, 4–7 dm. high, erect, leafy as well as the inflorescence.
Leaves grayish green beneath, only slightly tomentose. 23. *P. glomerata.*
Leaves densely white-tomentose beneath; stem densely hairy. 24. *P. dichroa.*
Petioles with spreading hairs.
Leaflets of at least the stem-leaves oblanceolate, sparingly hairy or glabrate above; petals often 1 cm. long. 25. *P. gracilis.*
Leaflets obovate, densely hairy above; plant 3–4 dm. high; petals 5–6 mm. long. 26. *P. camporum.*
Leaflets merely crenate with rounded or ovate teeth. 27. *P. filipes.*

VI. SUBJUGAE.

One species. 28. *P. subjuga.*

VII. AUREAE.

Leaflets toothed, the toothing not deeper than half-way to the midrib.
Leaflets crenate with rounded or rounded-ovate, obtuse teeth. 29. *P. Vreelandii.*
Leaflets closely toothed or cleft with lanceolate or oblong, acute or barely obtusish teeth or segments.
Leaflets spatulate or obovate; teeth usually spreading. 35. *P. concinnaeformis.*
Leaflets cuneate or cuneate-oblanceolate, toothed above the middle, teeth ascending.
Leaves rather densely silky-strigose, the basal ones often inclined to be pinnate. 30. *P. diversifolia.*
Leaves slightly pubescent, in age glabrous and somewhat glaucous, digitate. 31. *P. glaucophylla.*
Leaflets cleft or divided, the divisions extending two-thirds to the midrib or further.
Leaflets cleft into oblong or lanceolate divisions, slightly silky-strigose, in age glabrate. 32. *P. perdissecta.*
Leaflets divided into linear divisions, permanently strigose. 33. *P. multisecta.*

VIII. CONCINNAE.

Leaflets densely silvery-silky on both sides, only slightly if at all tomentose beneath.
Leaflets deeply dissected. 15. *P. Pecten.*
Leaflets merely toothed.
Inflorescence many-flowered and dense. 34. *P. fastigiata.*
Inflorescence few-flowered and open. 35. *P. concinnaeformis.*

Leaflets densely white-tomentose beneath.
Leaflets merely crenate or serrate.
Leaflets obovate to oblanceolate, toothed except at the very base.
Sepals ovate, acute. 36. *P. concinna.*
Sepals lanceolate, acuminate.
Leaflets obovate, few-toothed. (Occasional forms of) 42. *P. nivea.*
Leaflets oblanceolate, many-toothed. (Depauperate forms of) 27. *P. filipes.*
Leaflets oblong, with entire margins, only 3–toothed (seldom 5–toothed) at the apex. 37. *P. bicrenata.*
Leaflets deeply dissected.
Bractlets lanceolate or linear-lanceolate, acute; petals light yellow.
Plant diffuse; sepals ovate; leaves more or less grayish above. 38. *P. divisa.*
Plant erect or ascending; sepals lanceolate, acuminate; leaves green above. 39. *P. quinquefolia.*
Bractlets linear, obtuse; petals 4 mm. long, golden-yellow; inflorescence rather dense. 40. *P. modesta.*

IX. NIVEAE.

Leaflets oblanceolate or obovate, toothed or cleft, except at the very base; stem usually 1–2 dm. high, more or less leafy, several-flowered.
Leaflets deeply cleft, the clefts extending at least half-way to the midrib.
Inflorescence dense and congested. 41. *P. Hookeriana.*
Inflorescence open, with slender pedicels. 39. *P. quinquefolia.*
Leaflets coarsely toothed, the toothing rarely extending half-way to the midrib. 42. *P. nivea.*
Leaflets broadly cuneate, toothed only above the middle; stems usually less than 1 dm. high, scapiform, 1–2-flowered (rarely 3–flowered). 43. *P. uniflora.*

X. FRIGIDAE.

Stem less than 1 dm. high, decumbent; leaflets obovate, short-pilose; petals 5–8 mm long. 44. *P. emarginata.*
Stem 1–3 dm. high, erect; leaflets cuneate, flabelliform; petals 8–10 mm. long. 45. *P. flabellifolia.*

XI. BREVIFOLIAE.

One species. 46. *P. brevifolia.*

XII. RUBRICAULES.

Leaves mostly greenish above, tomentose beneath.
Segments of the leaves linear; stem nearly erect, slender; sepals almost linear. 47. *P. tenerrima.*
Segments of the leaves lanceolate or oblong; sepals lanceolate.
Plant densely cespitose; segments of the leaves obtuse.
Segments lanceolate, acute; leaflets only slightly tomentose beneath. 61. *P. viridior.*
Segments oblong to orbicular, obtuse.
Segments of the leaves narrowly oblong. 48. *P. saximontana.*
Segments of the leaves oval to orbicular. 49. *P. minutifolia.*
Plant with spreading branches; segments of the leaves acute. 38. *P. divisa.*
Leaves densely silky on both sides.
Leaves with 2 or 3 pairs of leaflets; bractlets much shorter than the sepals; stem strict. 50. *P. filicaulis.*
Leaves with 3–5 pairs of leaflets; bractlets little if at all shorter than the sepals; stem decumbent-ascending.
Leaflets deeply cleft. 51. *P. Macounii.*
Leaflets merely toothed. 52. *P. proxima.*

XIII. LEUCOPHYLLAE.

Pistils 20 or fewer; bractlets much shorter than the acuminate sepals; tomentum if any loose and not dense.
Plant tomentose throughout. 53. *P. coloradensis.*
Plant green and nearly glabrous up to the inflorescence. 54. *P. rupincola.*
Pistils usually more than 20.
Leaves white-tomentose beneath; pubescence of the stem and petioles mostly appressed.
Leaves almost equally white-pubescent on both sides.
Bractlets much shorter than the acuminate sepals.
Leaflets not closely approximate, finely tomentose. 55. *P. effusa.*
Leaflets closely approximate, coarsely appressed-silky as well as tomentose. 56. *P. lupina.*
Bractlets at least three-fourths as long as the acute sepals.
Inflorescence open; leaves silky and shining. 57. *P. Hippiana.*
Inflorescence dense; leaves loosely tomentose and rather dull. 58. *P. argyrea.*
Leaves green and merely silky above.
Leaflets usually 9, all usually ascending, the upper pair decurrent. 59. *P. propinqua.*
Leaflets 5–7, the lower spreading or reflexed, the upper pair not decurrent.
Leaflets densely white beneath; teeth ovate. 60. *P. pulcherrima.*

Leaflets thin, sparingly tomentose beneath; teeth lanceolate. 61. *P. viridior.*
Leaves green beneath, only slightly tomentulose when young; pubescence of the stems and petioles spreading. 62. *P. ambigens.*

XIV. MULTIJUGAE.

Pedicels at least in fruit arcuate-spreading; stems usually diffuse or spreading; leaflets pinnately divided, with several or many, oblong or lanceolate divisions. 63. *P. plattensis.*
Pedicels erect or ascending, straight; stem erect or ascending.
Leaflets dissected to near the midrib.
Stem and mature leaves glabrate; leaflets cuneate, cleft above the middle into oblong or ovate divisions.
Stem 1–3 dm. high; leaflets elongate-cuneate, with oblong divisions. 64. *P. Nelsoniana.*
Stem about 1 dm. high; leaflets short-cuneate, merely toothed at the apex. 65. *P. decurrens.*
Stem and mature leaves more or less hairy; leaflets obovate, at least the upper pinnatisect.
Divisions of the leaflets long, narrowly linear; stem 2–3 dm. high; leaflets many. 66. *P. wyomingensis.*
Divisions of the leaflets oblong or oblanceolate; stem less than 2 dm. high; leaflets few. 67. *P. ovina.*
Leaflets not dissected to near the midrib.
Leaves not densely grayish-strigose.
Sepals ovate or lance-ovate; bractlets lanceolate or oblong.
Stem about 1 dm. high; leaflets 1 cm. long or less, toothed only at the apex. 65. *P. decurrens.*
Stem 2–4 dm. high; leaflets more than 2 cm. long. 68. *P. Drummondii.*
Sepals linear-lanceolate, acuminate; bractlets linear-subulate. 54. *P. rupincola.*
Leaves densely grayish-strigose or silky.
Stem 1–4 dm. high, ascending or decumbent; leaflets cuneate or linear-oblong, conduplicate, toothed at the apex only. 69. *P. crinita.*
Stem stout, 6–7 dm. high; leaflets obovate-oblong, coarsely serrate. 62. *P. ambigens.*

XV. MULTIFIDAE.

Pubescence of the under side of the leaves silvery-white.
Petioles and lower part of the stem silky villous with spreading hairs. 70. *P. paucijuga.*
Petioles and stem tomentulose and silky strigose.
Segments of the leaflets linear or linear-oblong; branches of the inflorescence usually short and ascending.
Leaflets usually white on both sides; petals and sepals 4–6 mm. long.
Stem decumbent or ascending, 0.5–1 dm. high; leaflets 2 or 3 rather approximate pairs. 71. *P. pseudosericea.*
Stem erect, 3–5 dm. high; leaflets 3–7 usually rather remote pairs. 72. *P. bipinnatifida.*
Leaflets green above; petals and sepals about 3 mm. long. 73. *P. virgulata.*
Segments of the leaflets lanceolate or oblong, usually green above; branches of the inflorescence long and erect. 74. *P. platyloba.*
Pubescence of the under side of the leaves grayish.
Petioles and stem appressed-pubescent.
Segments of the leaflets narrowly linear; petals and sepals about 3 mm. long. 73. *P. virgulata.*
Segments of the leaflets ovate, lanceolate, or oblong; petals and sepals 4–6 mm. long.
Leaves glandular-pruinose above and sometimes with scattered long hairs. 75. *P. glabrella.*
Leaves short-strigose above.
Margins of the leaf-segments not revolute. 76. *P. pennsylvanica.*
Margins of the leaf-segments revolute. 77. *P. arachnoidea.*
Petioles and stem with spreading hairs.
Flowers distinctly pedicelled; upper leaflets of the basal leaves with 9–13 segments; pubescence of the stem and petioles long.
Plant dark green; leaves scarcely paler beneath. 78. *P. atrovirens.*
Plant not dark green; leaves decidedly paler beneath. 79. *P. strigosa.*
Flowers usually subsessile, densely conglomerate; upper leaflets of the basal leaves with 15–21 segments; pubescence of the stem short and dense. 80. *P. lasiodonta.*

13. ARGENTÌNA Lam. SILVER-WEED, GOOSE TANSY.

Achenes corky, with a deep groove; stem and petiole and rachis of the leaves densely pubescent, with at first ascending and later spreading hairs.
Leaves silvery on both sides. 1. *A. argentea.*
Leaves green and glabrate above. 2. *A. Anserina.*
Achenes not corky, without a groove; stem and petiole and the rachis of the leaves glabrous or slightly appressed-hairy and glabrate; hypanthium acute at the base. 3. *A. subarctica.*

14. CÓMARUM L. Marsh Cinquefoil, Purple Marshlocks, Cowberry.

1. *C. palustre.*

15. FRAGÀRIA L. Strawberry.

Pubescence of scape and petioles divaricate, *i. e.*, generally spreading at right angles or somewhat reflexed (scanty and less spreading in no. 3).
- Leaflets sessile; achenes superficial on the receptacle.
  - Flowers pinkish, nodding from the beginning. 1. *F. Helleri.*
  - Flowers white, erect or spreading, nodding only in fruit.
    - Calyx in fruit spreading or ascending; scape generally with long divaricate hairs and a leafy bract. 2. *F. bracteata.*
    - Calyx in fruit reflexed; leaflets rhombic-obovate, acute; scape and petioles sparingly hairy; hairs more ascending or appressed. 3. *F. americana.*
- Leaflets usually petiolulate; achenes set in usually deep pits.
  - Plant more or less glaucous; petals usually orbicular and twice as long as the sepals.
    - Sepals and bractlets elliptic. 4. *F. truncata.*
    - Sepals and bractlets lanceolate.
      - Sepals linear-lanceolate; leaflets cuneate, somewhat coriaceous, sharply toothed at the apex. 5. *F. cuneifolia.*
      - Sepals broadly lanceolate; leaflets broadly obovate or broadly cuneate, only a little longer than broad, with coarse acute teeth. 6. *F. platypetala.*
  - Plant not glaucous; petals elliptic, generally exceeding the sepals by one-half, usually over 10 mm. long; achenes set in shallow pits; leaves firm. 7. *F. grandiflora.*

Pubescence of the scape and petioles appressed or ascending; achenes in pits.
- Plants not glaucous.
  - Leaflets usually more than 3 cm. long, very veiny beneath; runners many. 8. *F. prolifica.*
  - Leaflets usually 1–3 cm. long, not very veiny; runners few. 9. *F. pumila.*
- Plants more or less glaucous.
  - Leaves rather thin.
    - Leaflets obovate; scape several-flowered. 10. *F. glauca.*
    - Leaflets oblong-cuneate; scape 1–4-flowered. 11. *F. pauciflora.*
  - Leaves rather thick, firm; leaflets oblong-cuneate. 12. *F. ovalis.*

16. SIBBÁLDIA L.

1. *S. procumbens.*

17. DASÍPHORA Raf. Shrubby Cinquefoil, Yellow Rose.

1. *D. fruticosa.*

18. DRYMOCÁLLIS Fourr.

Style fusiform, less than twice as long as the ovary.
- Sepals ovate to lanceolate, acute, rarely acuminate.
  - Petals white or cream-colored, often, however, turning more yellowish in drying.
    - Petals slightly if at all exceeding the sepals; inflorescence many-flowered, dense.
      - Leaves densely hairy; petals orbicular or nearly so, 7–8 mm. long; cyme short and dense; stem densely short-hairy. 1. *D. agrimonioides.*
      - Leaves sparingly hairy; petals obovate, 5–6 mm. long.
        - Cyme short, flat-topped; leaflets rounded-obovate to flabelliform; stem and petioles not conspicuously long-hairy. 2. *D. corymbosa.*
        - Cyme elongate, narrow; leaflets more or less rhombic-obovate; stem and petioles conspicuously long-hairy, especially below. 3. *D. convallaria.*
    - Petals much exceeding the sepals; cyme open, few-flowered; stem slender. 4. *D. pseudorupestris.*
  - Petals yellow in anthesis.
    - Leaflets with ovate teeth.
      - Petals much exceeding the sepals in length.
        - Bractlets lanceolate to linear; sepals lanceolate or ovate-lanceolate.
          - Plant tall, 3–10 dm. high; cyme flat-topped.
            - Leaflets rhombic-obovate, acute, at least the terminal one; inflorescence leafy. 5. *D. foliosa.*
            - Leaflets of the basal leaves orbicular to obovate, obtuse; upper leaves reduced. 6. *D. valida.*
          - Plant low, 2–3 dm. (rarely 4 dm.) high; cyme narrow, leafy; leaflets orbicular or rounded-obovate. 7. *D. fissa.*
        - Bractlets elliptic or oval; sepals ovate; stem 1–1.5 dm. high, almost scapose. 8. *D. pumila.*
      - Petals slightly if at all exceeding the sepals, 5–7 mm. long.
        - Bractlets linear-lanceolate, about two-thirds as long as the lanceolate sepals; leaflets obovate, irregularly or doubly toothed. 9. *D. glandulosa.*
        - Bractlets oblong or oblong-lanceolate; sepals ovate-lanceolate; leaflets more evenly simple-toothed, the lateral ones inclined to be orbicular. 10. *D. arizonica.*
    - Leaflets incised, with lanceolate teeth. 11. *D. incisa.*

Sepals oval or broadly ovate, rarely lanceolate, rounded and mucronate at the apex.
Petals 7–8 mm. long, ascending in anthesis; leaves densely hairy; plant stout. 1. *D. agrimonioides.*
Petals less than 6 mm. long, spreading or reflexed in anthesis.
Petals 4–6 mm. long; calyx and hypanthium in fruit together 10–12 mm. long; petioles conspicuously long-hairy; petals yellow. 12. *D. oregana.*
Petals 2–4 mm. long; calyx and hypanthium in fruit together 6–10 mm. long; petioles mostly short-hairy; petals whitish.
Petals obovate; sepals twice as long as broad. 13. *D. albida.*
Petals orbicular or nearly so; sepals half longer than broad. 14. *D. micropetala.*
Style filiform or nearly so, more than twice as long as the ovary; plant about 2 dm. high; petals much exceeding the sepals; leaflets rhombic-obovate. 15. *D. rhomboidea.*

19. CHAMAÈRHODOS Bunge. 1. *C. Nuttallii.*

20. SANGUISÓRBA L. Burnet. 1. *S. sitchensis.*

21. POTERÍDIUM Spach. 1. *P. occidentale.*

22. AGRIMÒNIA L. Agrimony.

Fruiting hypanthium with several series of bristles, the lower bristles reflexed; sepals acuminate with tips incurved in fruit. 1. *A. gryposepala.*
Fruiting hypanthium with 2–4 series of bristles, the latter erect, ascending or merely spreading; sepals acute. 2. *A. striata.*

23. COLEÓGYNE Torr. Black Bush. 1. *P. ramoissima.*

24. WALDSTEÌNIA Willd. Barren Strawberry. 1. *W. idahoensis.*

25. DRÝAS L. Dryad, Mountain Avens.

Sepals linear or linear-lanceolate; petals white, spreading.
Leaf-blades entire or with a few acutish teeth, shining and not conspicuously rugose above, broadest near the base. 1. *D. integrifolia.*
Leaf-blades coarsely round-crenate, dull, strongly rugose and impressed-reticulate above, broadest near the middle. 2. *D. octopetala.*
Sepals ovate or ovate-lanceolate; petals yellow, strongly ascending.
Hypanthium and calyx densely hairy with black glandular hairs, only slightly tomentose. 3. *D. Drummondii.*
Hypanthium and calyx densely white-tomentose, not glandular. 4. *D. tomentosa.*

26. GÈUM L. Avens.

Sepals reflexed; upper internode of the style less than one-third as long as the lower.
Petals white or ochroleucous; receptacle long-hairy; hairs at least half as long as the achenes. 1. *G. canadense.*
Petals bright or golden yellow; receptacle short-hairy.
Leaflets of the stem-leaves decurrent on the rachis, the upper ones confluent. 2. *G. decurrens.*
Leaflets of the stem-leaves not decurrent.
Upper internode of the style hirsute, the hairs about 1 mm. long; lower internode hirsute below, not glandular; petals orbicular, rounded at the base. 3. *G. strictum.*
Upper internode of the style short-hispidulous at the base or glabrous; petals usually cuneate at the base, except in *G. perincisum*; lower internode of the style glandular-puberulent.
Divisions of the upper stem-leaves ample, rhombic or cuneate; inflorescence corymbiform, usually with short branches. 4. *G. macrophyllum.*
Divisions of the upper small stem-leaves oblanceolate or rarely obovate; inflorescence open, with slender branches.
Leaflets doubly serrate or dentate; terminal leaflet of the basal leaves rounded or reniform. 5. *G. oregonense.*
Leaflets especially those of the upper leaves deeply incised; terminal leaflet of the basal leaves rhombic, ovate, or subcordate. 6. *G. perincisum.*
Sepals ascending or merely spreading; upper internode of the style at least half as long as lower internode, hirsute; petals flesh-colored, purple-veined. 7. *G. rivale.*

27. SIEVÉRSIA Willd. Old Man's Whiskers.

Leaflets cuneate, toothed at the apex.
Hypanthium at least in flower acute at the base; bractlets much exceeding the lanceolate sepals; petals elliptic. 1. *S. triflora.*
Hypanthium in flower rounded or sunken at the base; bractlets about equalling or shorter than the ovate or ovate-lanceolate sepals; petals broadly elliptic.
Bractlets linear or linear-subulate, equalling the sepals or slightly exceeding them. 2. *S. grisea.*
Bractlets oblong-linear or lanceolate, shorter than the sepals. 3. *S. canescens.*
Leaflets dissected at least half way into linear or linear-lanceolate divisions.

Bractlets longer than the sepals; hypanthium and sepals usually strongly purple-tinged. 4. *S. ciliata.*
Bractlets shorter than the sepals; hypanthium and sepals yellowish and only slightly purple-tinged.
Leaflets, except in depauperate specimens, 2–4 cm. long, ascending, scarcely glandular. 5. *S. flavula.*
Leaflets less than 1.5 cm. long, spreading, conspicuously glandular-pruinose and hirsute. 6. *S. brevifolia.*

28. ACOMASTYLIS Greene.

Leaves densely silky-canescent. 1. *A. sericea.*
Leaves puberulent, somewhat glandular-granuliferous or glabrate, not silky. 2. *A. turbinata.*

29. FALLUGIA Endl. Apache Plume. 1. *F. paradoxa.*

30. COWANIA D. Don. Cliff Rose. 1. *C. Stansburiana.*

31. PURSHIA DC. 1. *P. tridentata.*

32. CERCOCARPUS H.B.K. Mountain Mahogany.

Leaves serrate or dentate.
Hypanthium and leaves villous, with spreading hairs; leaves broadly obovate, 1.5–3 cm. long. 1. *C. montanus.*
Hypanthium and leaves appressed-silky.
Leaves obovate-flabelliform, 1–2 cm. long. 2. *C. flabellifolius.*
Leaves oblanceolate or obovate, 2–4 cm. long. 3. *C. argenteus.*
Leaves entire, from linear to elliptic, coriaceous, with more or less revolute margins, resinous.
Leaf-blades 1.5–3 cm. long; tail of fruit 4–6 cm. long.
Leaf-blades elliptic, only slightly revolute, in age merely tomentulose beneath; petioles 3–5 mm. long. 4. *C. ledifolius.*
Leaf-blades linear, strongly revolute, permanently white villous-tomentose beneath; petioles 1–2 mm. long. 5. *C. hypoleucus.*
Leaf-blades 5–15 mm. long, narrowly linear, strongly revolute, only the midrib of the lower surface exposed; tail of fruit 3–4 cm. long.
Leaves short-villous when young. 6. *C. arizonicus.*
Leaves glabrous from the beginning. 7. *C. intricatus.*

33. RUBACER Rydb. Flowering Raspberry, Thimbleberry, Salmon Berry. 1. *R. parviflorum.*

34. OREOBATUS Rydb. 1. *O. deliciosus.*

35. RUBUS (Tourn.) L. Raspberry, Blackberry, Cloudberry.

Stem herbaceous, never prickly, rarely bristly; floral branches directly from the rootstock or from stolons; stipules broad, free or nearly so.
Petals spreading or ascending; filaments not dilated.
Plants dioecious; drupelets many, coherent; petals large and broad; leaves merely lobed. 1. *R. Chamaemorus.*
Plants with perfect flowers; drupelets few, distinct; petals narrow; leaves pedately 5-foliolate. 2. *R. pedatus.*
Petals erect; filaments dilated.
Petals pink or rose-color; plants not stoloniferous; floral branches directly from the rootstock.
Petals oblanceolate or obovate, 10–15 mm. long, distinctly clawed; stem less than 1 dm. high, usually 1-flowered; leaflets rounded at the apex. 3. *R. acaulis.*
Petals broadly obovate, rounded or emarginate, scarcely clawed, 10 mm. long or less; stem leafy, 1–3 dm. high, 1–5-flowered; stem-leaves with rhombic acute leaflets. 4. *R. arcticus.*
Petals white; plant stoloniferous.
Plant wholly unarmed; flowers solitary or racemose. 5. *R. pubescens.*
Plant sparingly glandular-hispid above and sometimes with a few weak bristles; flowers corymbose. 6. *R. transmontanus.*
Stem more or less woody, biennial or perennial, usually prickly or bristly, if unarmed or merely bristly, then the stipules narrow and more or less adnate.
Stipules broad, free or nearly so; stem decumbent, prickly. 7. *R. nivalis.*
Stipules narrow, linear-lanceolate or subulate, adnate to the petioles.
Carpels united into a thimble-shaped aggregate fruit, separating from the dry receptacle.
Flowers solitary or few; petals purplish, large, much exceeding the sepals; leaves green on both sides. 8. *R. spectabilis.*
Flowers clustered; petals white, usually shorter than the sepals; leaves more or less tomentose or at least glaucous beneath.
Inflorescence corymbiform; fruit black or purple; stem prickly; leaves, when having more than 3 leaflets, pedately compound.

Prickles of the inflorescence not flattened, straightish; leaflets dark green above, acuminate, with small teeth; stem usually dark bluish, with a bloom. 9. *R. occidentalis.*
Prickles of the inflorescence strongly flattened and curved; leaflets yellowish green above, acute, with coarse teeth; branches usually straw-colored. 10. *R. leucodermis.*
Inflorescence racemose; fruit red; leaves, when having more than 3 leaflets, pinnately compound.
Plant not at all glandular-hispid; inflorescence with weak prickles, villous. 11. *R. melanotrachys.*
Plant more or less glandular-hispid, especially in the inflorescence.
Sepals narrowly lanceolate, gradually acuminate; leaves glabrate beneath in age.
Stem sparingly bristly; leaflets neither strongly plicate nor strongly veined. 12. *R. peramoenus.*
Stem densely bristly; leaves strongly plicate and strongly veined. 13. *R. viburnifolius.*
Sepals ovate or ovate-lanceolate abruptly acuminate.
Young stems, petioles, and inflorescence neither densely tomentose nor puberulent. 14. *R. melanolasius.*
Young stems, petioles and inflorescence densely tomentose or puberulent. 15. *R. acalyphaceus.*
Carpels coherent to the fleshy receptacle; plant dioecious with decumbent stems and 1–3-foliolate green leaves. 16. *R. macropetalus.*

36. RÒSA (Tourn.) L. Rose.

Pistils numerous; styles as well as the upper part of the hypanthium persistent; sepals in fruit erect or ascending, persistent.
Infrastipular prickles not present; branches mostly unarmed and young shoots bristly, but not prickly.
Inflorescence corymbose, terminating the stems (or rarely the branches); plant suffruticose; stem usually dying back to near the ground; leaflets 9–11.
Leaves glabrous or nearly so.
Leaflets mostly 2–5 cm. long, not glaucous, decidedly acute; plant 3 dm. high or more; flowers corymbose. 1. *R. arkansana.*
Leaflets rarely more than 2 cm. long, mostly rounded at the apex, somewhat glaucous beneath; plant 1–2 dm. high; flowers 1–3. 2. *R. Lunellii.*
eaves densely pubescent, especially beneath.
Upper stipules and bracts not densely glandular; leaflets 1.5–4 cm. long; plant 3–5 dm. high. 3. *R. suffulta.*
Upper stipules and bracts densely glandular; leaflets seldom more than 1.5 cm. long; plant 1–3 dm. high. 4. *R. alcea.*
Inflorescence of solitary or few corymbose flowers at the end of lateral branches; plant shrubby; leaflets usually 5 or 7, or 9 only on the young shoots.
Hypanthium decidedly pear-shaped or elliptic, acute at the base, with a distinct neck at the top.
Sepals rarely more than 1 cm. long; bark yellowish green. 5. *R. collaris.*
Sepals 2–3 cm. long; bark brown.
Leaflets conspicuously glandular-granuliferous, but scarcely at all hairy beneath, rounded-oval, double-toothed. 6. *R. Engelmannii.*
Leaflets densely pubescent, but rarely slightly if at all glandular-granuliferous beneath, mostly elliptic, simple-toothed. 7. *R. acicularis.*
Hypanthium subglobose, almost without a neck. 8. *R. Bourgeauiana.*
Infrastipular prickles usually present.
Flowers mostly solitary; petals usually 2.5 cm. long or more; fruit 12–20 mm thick.
Prickles straight or nearly so.
Hypanthium densely prickly. 9. *R. MacDougali.*
Hypanthium not prickly or rarely slightly so.
Leaflets more or less double-toothed, more or less glandular-granuliferous beneath; stipules and rachis glandular.
Leaflets very thin, pale and slightly glandular-granuliferous, but not muriculate beneath. 10. *R. nutkana.*
Leaflets thicker, dark green on both sides, conspicuously glandular-muriculate beneath. 11. *R. muriculata.*
Leaflets simple-toothed, puberulent but not glandular-granuliferous beneath; rachis rarely glandular. 12. *R. Spaldingii.*
Prickles more or less distinctly curved.
Hypanthium prickly.
Stem stout, 1 m. high or more; leaflets usually more than 3 cm. long. 13. *R. Underwoodii.*
Stem low, usually less than 3 dm. high; leaflets usually not more than 2 cm. long. 16. *R. aciculata.*
Hypanthium smooth.
Prickles very large and flat; twigs densely glandular and pubescent. 14. *R. Durandii.*
Prickles short and slender, not conspicuously flattened; twigs not conspicuously glandular, mostly glabrous.
Leaflets perfectly glabrous or merely glandular-granuliferous beneath.

Stem 1 m. high or more; leaflets usually more than 2 cm. long, pale or light green, rather firm, rarely double-serrate, not glandular-granuliferous beneath; calyx not densely glandular. 15. *R. melina.*
Stem usually less than 3 dm. high; leaflets usually less than 2 cm. long, dark green, glandular-double-toothed; calyx usually covered with stalked glands. 16. *R. aciculata.*
Leaflets sparingly pubescent beneath. 17. *R. oreophila.*
Flowers mostly corymbose, if solitary the petals 2 cm. long or less; fruit rarely more than 1 cm. thick.
Prickles more or less curved.
Leaflets finely puberulent or glandular-granuliferous, or both beneath.
Hypanthium ellipsoid; young shoots with rather few strong curved prickles. 18. *R. neomexicana.*
Hypanthium globose; young shoots with fine, often rather many prickles. 19. *R. puberulenta.*
Leaflets perfectly glabrous. 20. *R. manca.*
Prickles straight or nearly so.
Hypanthium globose; neck usually obsolete.
Stipules, petioles, and rachis conspicuously glandular. 21. *R. Fendleri.*
Stipules, petioles, and rachis not conspicuously glandular, usually glandless.
Leaflets glabrous or nearly so.
Leaves yellowish green; fruit orange; corymb several-flowered. 22. *R. chrysocarpa.*
Leaves dark green above, paler beneath; fruit purplish red; flowers 1–3. 23. *R. Woodsii.*
Leaflets more or less pubescent beneath.
Leaflets elliptic or oval, equally green on both sides.
Leaflets broadly oval, thin, 2–5 cm. long; plant nearly unarmed. 24. *R. salictorum.*
Leaflets narrowly oval, less than 3 cm. long, rather firm; plant prickly. 25. *R. ultramontana.*
Leaflets obovate, or if elliptic, more or less glaucous beneath.
Leaflets thin, very sharply serrate, equally green on both sides; sepals with a few slender bristles near the margins; prickles very slender. 26. *R. praelincta.*
Leaflets firmer, paler beneath; sepals without bristles; prickles stouter. 27. *R. Macounii.*
Hypanthium elongate, pear-shaped, with a distinct neck. 28. *R. pyrifera.*
Pistils few; styles deciduous with the upper part of the hypanthium, which falls off as a ring.
Leaflets very thin, scarcely paler beneath, with distinct reticulations. 29. *R. gymnocarpa.*
Leaflets not very thin, pale and indistinctly reticulate beneath. 30. *R. leucopsis.*

Family 61. **MALACEAE.** Apple Family.

Cells of the fruit by false partitions twice as many as the styles.
Flowers racemose; styles 3–5, rarely 2. 1. Amelanchier.
Flowers solitary or in 2- or 3-flowered corymbs; styles 2. 2. Peraphyllum.
Cells of the fruit as many as the styles.
Leaves pinnately compound; carpels leathery at maturity. 3. Sorbus.
Leaves simple, more or less pinnately lobed; carpels bony at maturity 4. Crataegus.

1. **AMELÁNCHIER** Medic. Service-berry, June-berry, Shadberry.

Top of the ovary, winter buds, and leaves glabrous from the beginning; fruit juicy; styles mostly 5.
Sepals mostly sparingly hairy within.
Petals oblanceolate, 18–20 mm. long; leaves thin, green. 1. *A. Cusickii.*
Petals oblong, 10–15 mm. long; leaves firmer, pallid. 2. *A. basalticola.*
Sepals perfectly glabrous on both sides; petals 10–12 mm. long.
Leaves green; styles 5, all united; twigs brown.
Leaves moderately toothed; lower one-third of the blade entire; teeth rarely over 2 mm. long. 3. *A. polycarpa.*
Leaves coarsely toothed to near the base; teeth 3–4 mm. long. 4. *A. pumila.*
Leaves bluish-green; styles 4, two and two united; twigs gray. 11. *A. Jonesiana.*
Top of the ovary and usually the winter buds pubescent; leaves hairy beneath, at least when young.
Fruit glabrous, in age purple, juicy; styles mostly 5, rarely 4.
Leaves glabrous above, white-tomentose but soon glabrate beneath.
Leaves mostly acute at the apex, toothed to near the base.
Leaf-blades elliptic, finely toothed, short-acuminate. 5. *A. canadensis.*
Leaf-blades oval, coarsely toothed, acute or obtuse. 6. *A. humilis.*
Leaves truncate or rounded at the apex, mostly toothed above the middle.

Leaf-blades thin, usually oval. 7. *A. florida.*
Leaf-blades firm, usually suborbicular. 8. *A. alnifolia.*
Leaves more or less permanently pubescent on both sides, more or less pale.
Leaves neither coarsely toothed nor strongly veined. 9. *A. oreophila.*
Leaves coarsely toothed and strongly veined. 10. *A. mormonica.*
Fruit even in age more or less pubescent, orange or yellow, not juicy; styles mostly 3 or 2.
Leaves coarsely toothed; branches gray.
Leaf-blades suborbicular, truncate at the apex.
Leaves dentate; teeth acute. 12. *A. Bakeri.*
Leaves crenate, teeth broad, rounder. 13. *A. crenata.*
Leaf-blades oval, acute to rounded at the apex. 14. *A. utahensis.*
Leaves finely toothed; branches brown or cherry-red. 15. *A. prunifolia.*

2. **PERAPHÝLLUM** Nutt. Squaw Apple, Wild Crab.

1. *P. ramosissimum.*

3. **SÓRBUS** L. Mountain Ash.

Leaflets acute or acuminate at the apex, serrate to near the base; inflorescence broad and flat-topped.
Leaflets linear-lanceolate, gradually acuminate, at least five times as long as broad. 1. *S. angustifolia.*
Leaflets elliptic or oblong, abruptly acuminate or acute, 2–3 times as long as broad. 2. *S. scopulina.*
Leaflets mostly rounded at the apex, entire towards the base; inflorescence small, usually round-topped. 3. *S. occidentalis.*

4. **CRATAEGUS** L. Haw or Hawthorn.

Fruit black or nearly so when ripe; nutlets irregularly pitted on the faces; leaves glabrate beneath, more or less pubescent above.
Inflorescence glabrous; spines mostly slender.
Leaf-blades narrow, rhombic-oblanceolate or elliptic, scarcely lobed.
Leaf-blades crenate; fruit 7–8 mm. in diameter; nutlets 5. 1. *C. saligna.*
Leaf-blades irregularly serrate; fruit 8–10 mm. in diameter; nutlets usually 4. 2. *C. rivularis.*
Leaf-blades broad, rhombic, lobed and incised. 3. *C. erythropoda.*
Inflorescence pubescent; spines short and stout; leaf-blades broad, ovate or obovate, somewhat lobed above the middle. 4. *C. Douglasii.*
Fruit red or red-purple; leaves pubescent beneath, at least on the veins.
Teeth of the leaves not glandular; nutlets deeply pitted on the faces. 5. *C. succulenta.*
Teeth of the leaves glandular; nutlets not pitted.
Leaf-blades suborbicular. 6. *C. chrysocarpa.*
Leaf-blades ovate, oval or obovate, more or less cuneate at the base.
Leaf-blades mostly 5–9 cm. long, with shallow, acute lobes. 7. *C. Williamsii.*
Leaf-blades 2–6 cm. long, with deep, often acuminate lobes. 8. *C. columbiana.*

Family 62. **AMYGDALACEAE.** Plum Family.

Drupe with pulpy exocarp; leaves not fascicled. 1. Prunus.
Drupe with almost dry exocarp, pubescent; leaves fascicled. 2. Emplectocladus.

1. **PRÙNUS** L. Plums, Cherries.

Flowers few, umbellate or corymbose.
Fruit with a ventral groove and flat stone. (Plums.)
Leaves oval or orbicular, rounded at the apex. 1. *P. subcordata.*
Leaves lanceolate to obovate, acute or acuminate.
Trees or shrubs, usually spiny; leaves serrate to near the base. 2. *P. americana.*
Low undershrub, unarmed; leaves entire at the base. 3. *P. prunella.*
Fruit without a ventral groove; stone subglobose. (Cherries.)
Creeping shrub; flowers umbellate. 4. *P. Besseyi.*
Erect shrubs or trees.
Hypanthium decidedly obconic; flowers umbellate from naked lateral buds. 5. *P. ignota.*
Hypanthium campanulate or turbinate; flowers more or less corymbose.
Leaves acute, serrate.
Corymbs naked. 6. *P. pennsylvanica.*
Corymb usually subtended by 1 or 2 leaves. 7. *P. corymbulosa.*
Leaves obtuse or rounded at the apex, crenulate.
Leaves glabrous. 8. *P. emarginata.*
Leaves pubescent. 9. *P. prunifolia.*
Flowers many, racemose on leafy branches. (Choke Cherries.)
Leaves more or less pubescent beneath.
Peduncles stout; pedicels pubescent, shorter than the fruit, deciduous; leaves thick. 10. *P. valida.*

Peduncles slender; pedicels glabrous, longer than the fruit, persistent; leaves rather thin. 11. *P. demissa.*
Leaves glabrous on both sides. 12. *P. melanocarpa.*

2. EMPLECTOCLÀDUS Torr. WILD ALMONDS. 1. *E. fasciculatus.*

FAMILY 63. MIMOSACEAE. MIMOSA FAMILY.

Legumes flat; valves not separating from the continuous margins. 1. ACUAN.
Legumes 4–angled; valves separating from the continuous margins. 2. MORONGIA.

1. ÁCUAN Medic. PRAIRIE MIMOSA. 1. *A. illinoensis.*

2. MORÓNGIA Britton. SENSITIVE BRIER. 1. *M. uncinata.*

FAMILY 64. CAESALPINIACEAE. SENNA FAMILY.

Leaves bipinnate; anthers opening lengthwise. 1. HOFFMANSEGGIA.
Leaves simply pinnate; anthers opening by terminal pores. 2. CHAMAECRISTA.

1. HOFFMANSÉGGIA Cav.

Leaves, flowers, and pods with black glandular dots; pod short, straight on the back or nearly so. 1. *H. Jamesii.*
Leaves, flowers, and pods without glandular dots.
Pod about 7 mm. wide, strongly arcuate. 2. *H. depranocarpa.*
Pod 12–14 mm. wide, straight or nearly so. 3. *H. repens.*

2. CHAMAECRÍSTA Moench. PARTRIDGE PEA, SENSITIVE PEA, WILD SENSITIVE PLANT. 1. *C. fasciculata.*

FAMILY 65. FABACEAE. PEA FAMILY.

Filaments distinct.
Leaves pinnate. Tribe I. SOPHOREAE.
Leaves digitately 3-foliolate. Tribe II. PODALYRIEAE.
Filaments monadelphous or diadelphous.
Rachis of the leaves not produced into a tendril or bristle-like appendage, representing the terminal leaflet.
Fruit 2-valved or indehiscent, not a loment.
Foliage not glandular-dotted.
Anthers of 2 kinds; filaments monadelphous; leaves digitate; calyx 2-lipped. Tribe III. GENISTEAE.
Anthers all alike; filaments diadelphous; calyx 5-toothed.
Leaflets toothed. Tribe IV. TRIFOLIEAE.
Leaflets not toothed.
Filaments all or at least 5 of them (alternately) dilated above; flowers umbellate, or solitary. Tribe V. LOTEAE.
Filaments all filiform; flowers racemose or capitate.
Herbs, shrubs, or trees; keel of the corolla neither curved nor coiled. Tribe VII. GALEGEAE.
Herbaceous vines; keel of the corolla in ours coiled or at least curved. Tribe XI. PHASEOLEAE.
Filaments all filiform; leaves odd-pinnate; flowers racemose or capitate. Tribe VII. GALEGEAE.
Foliage glandular-dotted.
Pod prickly. Tribe VIII. GLYCYRRHIZEAE.
Pod not prickly. Tribe VI. PSORALEAE.
Fruit a loment, *i. e.*, breaking up transversely into 1-seeded indehiscent reticulate internodes. Tribe IX. HEDYSAREAE.
Rachis of the leaves produced into a tendril or bristle-like appendage. Tribe X. VICIEAE.

TRIBE I. SOPHOREAE.

One genus. 1. SOPHORA.

TRIBE II. PODALYRIEAE.

One genus. 2. THERMOPSIS.

TRIBE III. GENISTEAE.

One genus. 3. LUPINUS.

TRIBE IV. TRIFOLIEAE.

Leaves digitate, in most 3-foliolate. 4. TRIFOLIUM.
Leaves pinnately 3-foliolate.
Pod curved or coiled. 5. MEDICAGO.
Pod straight. 6. MELILOTUS.

TRIBE V. LOTEAE.

Keel prolonged into an incurved beak; leaves odd-pinnate.
Stipules foliaceous; flowers in umbels. 7. LOTUS.
Stipules gland-like; flowers mostly solitary. 8. ACMISPON.

Keel blunt, not beaked.
Legumes straight or nearly so, acute, dehiscent.
Stipules foliaceous; leaves regulaly odd-pinnate. 9. HOSACKIA.
Stipules gland-like; leaves irregularly even-pinnate. 10. ANISOLOTUS.
Legumes curved, indehiscent, caudate-acuminate. 11. SYRMATIUM.

TRIBE VI. PSORALEAE.

Petal 1 (standard); leaves odd-pinnate. 12. AMORPHA.
Petals 5.
Wings and keel free from the filament-tube; ovules solitary; leaves digitate. 13. PSORALEA.
Wings and keel more or less adnate to the filament-tube; ovules 2–6; leaves odd-pinnate.
Stamens 9 or 10. 14. PAROSELA.
Stamens 5. 15. PETALOSTEMON.

TRIBE VII. GALEGEAE.

Leaflets with stipels; pods margined on one edge; trees or shrubs. 16. ROBINIA.
Leaflets without stipels; pods not margined; herbs or undershrubs.
Stipules modified into spines. 17. PETERIA.
Stipules not modified into spines.
Keel (lower petal) not produced into a beak.
Leaves odd-pinnate, or unifoliolate or simple.
Pods papery, strongly inflated.
Pods strictly 1-celled. 18. PHACA.
Pods 2-celled.
Pods terete or nearly so. 19. CYSTIUM.
Pods sharply 3-angled in cross-section. 20. ONIX.
Pods coriaceous or chartaceous, if thin-walled, not inflated.
Pods 2-celled with a perfect or nearly perfect partition.
Pods fleshy, indehiscent or very tardily dehiscent. 21. GEOPRUMNON.
Pods membranous, leathery or woody, dehiscent.
Pods ovoid or oblong, rarely almost didymous, terete or vertically flattened, leathery or woody. 22. ASTRAGALUS.
Pods linear, somewhat laterally flattened, membranous. 23. HAMOSA.
Pods 1-celled, the partition, if any, rudimentary.
Lower suture strongly intruded, making the pod sagittate or obcordate in cross-section; pod membranous, rarely leathery. 24. TIUM.
Lower suture not intruded or merely slightly so; pods in the latter case woody.
Pods woody or chartaceous, never flattened laterally; both sutures not prominent.
Pods more or less stipitate.
Pods with two grooves on the upper side, strictly 1-celled. 25. DIHOLCOS.
Pods without grooves on the upper side, usually with a partial partiton.
Leaves unifoliolate. 26. JONESIELLA.
Leaves odd-pinnate. 27. RYDBERGIELLA.
Pods sessile, usually without even a rudimentary partition.
Valves of the pods not winged.
Pods with a fleshy epicarp, in fruit cross-ribbed; leaflets obscurely articulated to the rachis, fleshy, narrow. 28. CTENOPHYLLUM.
Pods without fleshy epicarp; leaflets distinctly articulated to the rachis.
Calyx cylindrical; flowers large; plant mostly low and cespitose. 30. XYLOPHACOS.
Calyx campanulate; flowers small.
Corolla yellow; calyx-lobes linear-lanceolate, equalling the tube; stipules united; stem low. 29. CNEMIDOPHACOS.
Corolla purple; calyx-lobes triangular, much shorter than the tube; stipules free or nearly so; stem tall and slender. 31. MICROPHACOS.
Valves of the pods winged. 32. PTEROPHACOS.
Pods membranous, usually somewhat flattened laterally, if terete, both sutures prominent.
Partial partition present. 33. ATELEPHRAGMA.
Partial partition wanting.
Leaflets not spinulose-tipped; pods several-seeded. 34. HOMALOBUS.
Leaflets spinulose-tipped; pods 1–2-seeded. 35. KENTROPHYTA.
Leaves digitately 3-foliolate.
Flowers racemose. 36. OREOPHACA.
Flowers capitate (some species of). 4. TRIFOLIUM.
Keel (lower petals) produced into a beak. 37. ARAGALLUS.

TRIBE VII. GLYCYRRHIZEAE.

One genus. 38. GLYCYRRHIZA.

TRIBE IX. HEDYSARIEAE.

Leaves odd-pinnate, with several pairs of leaflets, without stipels.
Pods 4–several-seeded, neither spiny nor dorsally toothed. 39. HEDYSARUM.
Pods 1–2-seeded, more or less spiny or toothed. 40. ONOBRYCHIS.
Leaves 3-foliolate, with stipels. 41. MEIBOMIA.

TRIBE X. VICIEAE.

Style filiform, hairy all around and below the apex; stamen-tube usually oblique at the summit. 42. VICIA.
Style flattened towards the apex, hairy on the inner side; stamen-tube usually truncate or nearly so. 43. LATHYRUS.

TRIBE XI. PHASEOLEAE.

Leaves 5–7-foliolate; style glabrous. 44. APIOS.
Leaves 3-foliolate; style bearded along the inner side. 45. STROPHOSTYLES.

1. SOPHÒRA L. 1. *S. sericea.*

2. THERMÓPSIS R. Br. YELLOW PEA, GOLDEN PEA, PRAIRIE BEAN.

Legume erect or ascending.
Fruit straight.
Legume strictly erect and appressed to the peduncle, densely pubescent.
Leaves strongly ascending; leaflets lance-oblong or oblanceolate; stipules lanceolate or oblong, more than twice as long as broad; raceme dense. 1. *T. montana.*
Leaves spreading; leaflets rhombic-elliptic to elliptic-oblong; lower stipules at least ovate, very oblique, less than twice as long as broad.
Raceme lax; legume straight. 2. *T. ovata.*
Raceme dense; legume somewhat curved. 4. *T. xylorrhiza.*
Legume ascending, sparingly pubescent; stipules broad; raceme few-flowered. 3. *T. pinetorum.*
Fruit arcuate with spreading tips.
Legume 4–6 cm. long. 4. *T. xylorrhiza.*
Legume 8–10 cm. long. 5. *T. divaricarpa.*
Legume strongly divaricate or reflexed; inflorescence short.
Fruit mostly horizontal, merely arcuate. 6. *T. arenosa.*
Fruit reflexed, curved into half a circle or more.
Leaves glabrous above. 7. *T. rhombifolia.*
Leaves silvery on both sides. 8. *T. annulocarpa.*

3. LUPÌNUS (Tourn.) L. LUPINE, WOLF'S BEAN, BLUE BONNET, QUAKER BONNET.

Perennials with rootstocks; cotyledons petioled after germination.
Plant tall, 3 dm. high or more.
Stem with appressed hairs.
Leaves glabrous above, at least in age.
Flowers large, over 12 mm. long.
Stem rather low and stout, canescent-strigose; leaflets broadly oblanceolate. I. PLATTENSES.
Stem glabrous or almost so, tall; leaflets narrowly oblanceolate. X. POLYPHYLLI.
Flowers small, less than 12 mm. long. II. PARVIFLORI.
Leaves permanently pubescent above.
Flowers yellow or ochroleucous. V. SULPHUREI.
Flowers blue, purple, or white.
Calyx produced backwards into a distinct spur or sack.
Spur of the calyx 2–3 mm. long. III. CALCARATI.
Spur of the calyx 1 mm. long or less. IV. ARGOPHYLLI.
Calyx merely gibbous at the base, not produced backwards.
Plant green, usually not densely hairy; pubescence short, or if longer, very sparse.
Keel moderately curved, lunate, the upper portion longer than the lower. VI. ALBICAULES.
Keel strongly curved, the upper portion shorter than the lower. VII. FOLIOSI.
Plant densely silvery or canescent with long hairs.
Stem leafy; pubescence of the leaves appressed. VIII. ORNATI.
Stem leafy at the base only, pubescence of the leaves longer and looser. XIV. LEPIDI.
Stem with spreading pubescence.
Leaflets glabrous above, at least in age; flowers large.
Bracts linear-subulate, long-attenuate, almost setaceous, much exceeding the flower-buds. IX. CYTISOIDES.
Bracts lanceolate, scarcely exceeding the flower-buds.
Stem tall, leafy throughout; leaflets narrowly oblanceolate, acute. X. POLYPHYLLI.
Stem low, stout, leafy mostly towards the base; leaflets broadly oblanceolate or spatulate, mucronate. XI. AMNOPHILI.

Leaflets permanently pubescent above.
Pubescence of the stem of one kind, usually short, except in *L. comatus*. XII. CYANEI.
Pubescence of the stem of two kinds, viz., a short and dense under-pubescence and scattered long silky hairs. XIII. LEUCOPHYLLI.
Plant low, less than 3 dm. high, densely cespitose.
Inflorescence much exceeding the leaves.
Leaves mostly basal; petioles many times longer than the leaflets. XIV. LEPIDI.
Leaves mostly cauline; petioles of the cauline leaves only slightly, if at all, exceeding the leaflets in length.
Leaves densely canescent. XV. CANDICANTES.
Leaves green. XVI. MONTICOLAE.
Inflorescence not exceeding the leaves. XVII. CAESPITOSI.
Annuals.
Cotyledons after germination petioled; pods 3–4-seeded. XVIII. CONCINNI.
Cotyledons after germination sessile, persistent, clasping the stem; pod 2-seeded. XIX. PUSILLI.

I. PLATTENSES.

One species. 1. *L. plattensis*.

II. PARVIFLORI.

Calyx spurred or saccate at the base, appressed-silky; banner pubescent on the back; keel ciliate.
Leaflets oblanceolate, flat; racemes comparatively dense; flowers numerous, subverticillate. 2. *L. pseudoparviflorus*.
Leaflets linear, conduplicate; flowers scattered in a lax raceme. 3. *L. stenophyllus*.
Calyx somewhat gibbous at the base, but not produced backwards into a spur or sack.
Inflorescence, pedicels, and calyces finely white-silky with strictly appressed hairs.
Flowers 15 mm. long; corolla white. 4. *L. leucanthus*.
Flowers 12 mm. long or less; corolla purple or blue.
Banner somewhat silky on the back; lower lip of the calyx twice as long as the upper; keel ciliate on the margins. 5. *L. Scheuberae*.
Banner glabrous; keel not ciliate.
Lower lip of the calyx only slightly longer than the upper; flowers about 10 mm. long; plant green. 6. *L. laxispicus*.
Lower lip of the calyx much longer than the upper; corolla about 8 mm. long; plant silvery. 7. *L. tenellus*.
Inflorescence, pedicels, and calyces more loosely pubescent; hairs at least in age spreading.
Flowers middle-sized, 8–12 mm. long.
Banner pubescent on the back; plant silvery. 8. *L. argenteus*.
Banner glabrous; plant green.
Calyx strongly gibbous at the base; keel glabrous; stem purplish. 9. *L. rubricaulis*.
Calyx not strongly gibbous; stem green.
Banner blue or purplish, not dark-spotted.
Lower lip of the calyx about twice as long as the upper; leaves broadly oblanceolate. 10. *L. spathulatus*.
Lower lip of the calyx only slightly longer than the upper; leaflets narrowly oblanceolate. 11. *L. alpestris*.
Banner light blue with a dark spot. 12. *L. maculatus*.
Flowers about 6 mm. long.
Leaflets narrowly oblanceolate.
Lips of the calyx acutely 2- and 3-toothed. 13. *L. floribundus*.
Lips of the calyx obtuse, merely retuse. 14. *L. leptostachyus*.
Leaflets broadly oblanceolate. 15. *L. parviflorus*.

III. CALCARATI.

One species 16. *L. calcaratus*.

IV. ARGOPHYLLI.

Lower lip of the calyx about half longer than the upper; leaflets linear-oblanceolate.
Petals and calyx-lobes narrow; wings fully twice as long as broad; lower lip of calyx narrowly lanceolate; plant greener; inflorescence lax. 17. *L. lariflorus*.
Petals and calyx-lobes broad; lower lip of the calyx broadly lanceolate; plant silvery white; inflorescence dense. 18. *L. aduncus*.
Lower lip of the calyx about twice as long as the upper; leaflets broadly lanceolate.
Leaflets equally silvery white on both sides, usually conduplicate; their backs usually curved. 19. *L. argentinus*.
Leaflets grayish canescent, greener above, flat. 20. *L. lupinus*.

V. SULPHUREI.

Flowers 12–14 mm. long; upper lip of calyx about 8 mm. long. 21. *L. flavescens*.
Flowers 1 cm. long or less; upper lip of calyx very short, only 4 mm. long.
Inflorescence loosely pubescent; flowers about 10 mm. long. 22. *L. sulphureus*.
Inflorescence finely appressed-silky; flowers about 8 mm. long. 23. *L. lucidulus*.

VI. ALBICAULES.

One species. 24. *L. albicaulis*.

VII. Foliosi.

Flowers about 15 mm. long; pubescence long, sparse. 11. *L. alpestris.*
Flowers 8–12 mm. long; pubescence short.
Banner glabrous.
Bracts linear-subulate, long-attenuate, 8–12 mm. long, longer than the buds.
Flowers dark blue, ascending, in lax racemes; calyx appressed-silky. 25. *L. adscendens.*
Flowers white in dense racemes, spreading; calyx with spreading hairs. 26. *L. ingratus.*
Bracts lanceolate, short-acuminate, 4–7 mm. long; flowers spreading; calyx with short spreading hairs.
Flowers dark blue or dark purple; stems simple, low, 1–3 dm. high, from a cespitose caudex.
Pubescence of the stem and leaves short. 27. *L. Macounii.*
Pubescence of the stem and leaves rather long. 70. *L. monticola.*
Flowers lilac or rose-colored, rarely white; plant tall, 3–8 dm. high, branched. 28. *L. foliosus.*
Banner more or less pubescent.
Corolla light blue or lilac, 7–8 mm. long; keel glabrous. 29. *L. laxus.*
Corolla 8–10 mm. long; keel ciliate on the margins.
Corolla dark blue or purple; stems mostly simple. 30. *L. pulcherrimus.*
Corolla light blue, or lilac, or pink; stem much branched. 8. *L. argenteus.*

VIII. Ornati.

Bracts subulate, much longer than the flower-buds. 31. *L. flexuosus.*
Bracts ovate or lanceolate, rarely exceeding the flower-buds.
Flowers less than 12 mm. long.
Flowers 6–7 mm. long. 32. *L. tenuispicus.*
Flowers 8–10 mm. long. 33. *L. Greenei.*
Flowers over 12 mm. long.
Stem few-leaved, only slightly exceeding the long petioles of the basal leaves.
Pubescence of the leaves long and rather loose, hirsute rather than silky. 34. *L. Rydbergii.*
Pubescence of the leaves fine and short, strictly appressed and silky.
Pubescence of the calyx and pedicels short, loose and spreading. 35. *L. humicola.*
Pubescence of the calyx and pedicel densely and finely appressed-pubescent, silky. 36. *L. Hellerae.*
Stems very leafy, many times exceeding the basal leaves.
Flowers 15–20 mm. long; pubescence at least on the inflorescence brownish in age. 37. *L. ornatus.*
Flowers 10–14 mm long; pubescence white-silky. 38. *L. leucopsis.*

IX. Cytisoides.

Stem arachnoid-villous; flowers 18–20 mm. long. 39. *L. nootkatensis.*
Stem sparingly hairy or glabrous; flowers 10–15 mm. long.
Stem decidedly pubescent with long spreading hairs.
Banner only slightly shorter than the wings; plant 2–7 dm. high. 40. *L. Wyethii.*
Banner much shorter than the wings; plant about 10 dm. high.
Racemes dense; flowers about 12 mm. long, dark blue, verticillate, leaflets oblanceolate, long-hairy beneath. 41. *L. amplus.*
Racemes lax; flowers about 10 mm. long, light blue or white, mostly singly; leaflets narrowly oblanceolate, short-hairy beneath. 42. *L. marianus.*
Stem glabrous or nearly so.
Calyx and bracts villous. 43. *L. Burkei.*
Calyx and bracts appressed-silky. 44. *L. cytisoides.*

X. Polyphylli.

Stem decidedly hairy; leaflets oblanceolate. 45. *L. glabratus.*
Stem glabrous or nearly so; leaflets narrowly oblanceolate. 46. *L. polyphyllus.*

XI. Ammophili.

Keel ciliate on the margins; leaves rather thick. 47. *L. ammophilus.*
Keel glabrous; leaves thin. 45. *L. glabratus.*

XII. Cyanei.

Pubescence of the stem long; leaves greener. 48. *L. comatus.*
Pubescence rather short, leaves canescent or silvery.
Pubescence of the leaves appressed.
Corolla blue; banner with a light spot.
Bracts linear-lanceolate to subulate, 5–8 mm. long.
Corolla 12–14 mm. long; leaflets 3–7 cm. long. 49. *L. sericeus.*
Corolla 10 mm. long or less; leaflets 2–3 cm. long. 50. *L. apronosus.*
Bracts lanceolate, 3–5 mm. long.
Leaflets densely pubescent above; corolla about 12 mm. long. 51. *L. Bakeri.*
Leaves sparingly pubescent or glabrate above; corolla about 10 mm. long. 52. *L. cyaneus.*
Corolla at first white; banner turning purplish; no light spot. 53. *L. dichrous.*

Pubescence of the leaves long and loose; corolla light purple or pink; banner with a dark spot. 54. *L. flavicaulis.*

XIII. LEUCOPHYLLI.

Racemes elongate, 1–3 dm. long, terminal.
Flowers numerous in a very long and dense raceme.
Bracts lanceolate, not much longer than the buds.
Pubescence not very dense.
Pubescence on the leaves appressed. 55. *L. macrostachys.*
Pubescence on the leaves short, spreading. 56. *L. retrorsus.*
Pubescence very dense, in age more or less rusty, and rather loose. 57. *L. leucophyllus.*
Bracts subulate, much exceeding the buds; flowers about 16 mm. long.
Pubescence of the leaves long and loose. 58. *L. plumosus.*
Pubescence of the leaves short, appressed. 59. *L. Jonesii.*
Flowers in a long, but lax raceme. 60. *L. barbiger.*
Racemes short, 3–5 cm. long, terminating short divaricate branches. 61. *L. ramosus.*

XIV. LEPIDI.

Stem trailing or decumbent. 62. *L. depressus.*
Stem erect or ascending, if at all decumbent, only so at the base.
Pubescence of the stem and leaves loose. 63. *L. aridus.*
Pubescence of the stem and leaves appressed.
Flowers 7–10 mm. long; stem mostly 1-leaved or leafless; pubescence short.
Racemes short, dense, 2–5 cm. long; flowers about 10 long. 64. *L. minimus.*
Racemes elongate, 8–9 cm. long; flowers 7–8 mm. long. 65. *L. erectus.*
Flowers 12 mm. long or more; stem with several stem-leaves; pubescence long. 66. *L. lepidus.*

XV. CANDICANTES.

Flowers 9–10 mm. long or more.
Peduncles short; raceme elongate. 67. *L. psoralioides.*
Peduncles elongate; racemes short. 68. *L. candicans.*
Flowers 6–7 mm. long. 69. *L. Evermannii.*

XVI. MONTICOLAE.

Flowers 9–10 mm. long; petals dark blue; banner with a light spot. 70. *L. monticola.*
Flowers 7–8 mm. long; petals light rose, turning yellowish. 71. *L. roseolus.*

XVII. CAESPITOSI.

Plant loosely pubescent with long hairs.
Racemes very short and dense, sessile; bracts lanceolate, about equalling the flowers; pubescence rather appressed. 72. *L. caespitosus.*
Racemes elongate; bracts subulate, exceeding the flowers; pubescence spreading. 73. *L. Watsonii.*
Plant densely canescent. 74. *L. Cusickii.*

XVIII. CONCINNI.

One species. 75. *L. micensis.*

XIX. PUSILLI.

Racemes dense, subcapitate; lower lip of the calyx 2–3-toothed.
Plant almost stemless; lower lip of the calyx oval or ovate. 76. *L. brevicaulis.*
Plant with distinct leafy stem; lower lip of the calyx oblong-lanceolate. 77. *L. Kingii.*
Racemes more elongate and less dense; lower lip of the calyx entire.
Peduncles much exceeding the leaves. 78. *L. scaposus.*
Peduncles very short, shorter than the petioles.
Racemes lax, usually much exceeding the leaves; lower part of the calyx and pedicels glabrous. 79. *L. rubens.*
Racemes dense, slightly if at all exceeding the leaves; calyx and pedicels densely hirsute. 80. *L. pusillus.*

4. TRIFÒLIUM (Tourn.) L. CLOVER, TREFOIL.

Heads not involucrate; bracts inconspicuous.
Leaflets 5–7. I. MACROCEPHALA.
Leaflets 3.
Plants mostly tall; stem leafy; perennials with rootstocks.
Corolla yellow. XII. AGRARIA.
Corolla white, red, or purple.
Calyx hairy.
Heads oblong. II. PLUMOSA.
Heads spherical.
Heads sessile; corolla red-purple; free portion of the stipules ovate. III. PRATENSIA.
Heads long-peduncled; corolla white or pink; free portion of the stipules elongate-lanceolate. IV. LONGIPEDIA.
Calyx glabrous.
Peduncles terminal; corolla dark red or purple. V. ALTISSIMA.
Peduncles axillary; corolla white or rose-colored. VI. REPENTIA.

Plants low, pulvinate-cespitose perennials; stems scapiform.
Calyx glabrous; leaflets minutely denticulate. VII. NANA.
Calyx pubescent.
Leaflets oval or obovate, strongly veined, and sharply dentate. VIII. GYMNOCARPA.
Leaflets lanceolate or linear-lanceolate, entire-margined and not strongly veined. IX. DASYPHYLLA.
Heads more or less involucrate by rather conspicuous, usually more or less united bracts.
Plants low, densely cespitose, subacaulescent; bracts if at all united only at the base, not aristate.
Plant densely pubescent. X. ANDINA.
Plants glabrous. XI. PARRYANA.
Plants with elongated leafy stem; bracts united to a monophyllous involucre; leaflets in ours spinulose denticulate. XII. INVOLUCRATA.

I. MACROCEPHALA.

One species. 1. *T. macrocephalum.*

II. PLUMOSA.

One species. 2. *T. plumosum.*

III. PRATENSIA.

One species. 3. *T. pratense.*

IV. LONGIPEDIA.

Stem with spreading villous pubescence.
Calyx two-thirds as long as the corolla; teeth 2–3 times as long as the calyx-tube. 4. *T. eriocephalum.*
Calyx scarcely half as long as the corolla; teeth only slightly longer than the tube. 5. *T. villiferum.*
Stem appressed-pubescent or glabrous.
Banner broad, obtuse; calyx about one-third as long as the corolla. 6. *T. macilentum.*
Banner narrow, acute or acutish; calyx one-half to one-third as long as the corolla.
Plant cespitose from a woody root; stem ascending; corolla salmon-colored. 7. *T. Rusbyi.*
Plant erect, with a creeping rootstock.
Calyx-teeth a little longer than the tube, the upper ones scarcely exceeding it in length; plant usually less than 1.5 dm. high; corolla white. 8. *T. orbiculatum.*
Calyx-teeth much exceeding the tube, the lower twice as long or nearly so; plant usually over 1.5 dm. high.
Lower part of the calyx glabrous, upper part and the teeth villous, with spreading hairs; corolla rose or purple.
Flowers 13–15 mm. long, reflexed in fruit. 9. *T. confusum.*
Flowers 10–12 mm. long.
Flowers reflexed in fruit; lateral veins of leaves arched. 10. *T. harneyense.*
Flowers not reflexed; lateral veins of the leaves not arched. 11. *T. pedunculatum.*
Calyx hairy throughout; corolla white or yellowish white, rarely pinkish.
Flowers not reflexed in fruit. 12. *T. longipes.*
Flowers reflexed in fruit.
Pedicels 1.5–3 mm. long; leaflets broadly oval, ovate, or obovate.
Stem low, decumbent, 1–3 dm. high; leaflets usually broadly obovate or oval. 13. *T. latifolium.*
Stem tall, erect, 3–4 dm. high; leaflets ovate. 14. *T. Aitonii.*
Pedicels almost none; leaflets linear-oblong to narrowly oval. 15. *T. Rydbergii.*

V. ALTISSIMA.

Calyx-teeth twice as long as the tube, contorted; leaflets linear to elliptic. 16. *T. Douglasii.*
Calyx-lobes scarcely longer than the tube; leaflets oval to elliptic or lanceolate.
Leaflets broad and obtuse; flowers about 1.5 cm. long. 17. *T. Beckwithii.*
Upper leaflets lanceolate, acuminate; flowers about 1 cm. long. 18. *T. Kingii.*

VI. REPENTIA.

Plant ascending; corolla rose or pink, rarely white. 19. *T. hybridum.*
Plant creeping; corolla white or tinged with pink. 20. *T. repens.*

VII. NANA.

Heads 1–3-flowered; flowers not reflexed; calyx-teeth lanceolate; caudex thick, densely cespitose, with short branches. 21. *T. nanum.*
Heads several-flowered; flowers reflexed; calyx-teeth subulate; branches of the caudex more slender and elongate.
Corolla purple, 15–20 mm. long. 22. *T. Brandegei.*
Corolla white or light rose, 10–15 mm. long. 23. *T. Haydenii.*

VIII. GYMNOCARPA.

Flowers 10–12 mm. long. 24. *T. subacaulescens.*
Flowers about 8 mm. long. 25. *T. gymnocarpon.*

IX. Dasyphylla.

Flowers reflexed in fruit; bracts minute, truncate and toothed.
Calyx two-thirds to three-fourths as long as the corolla, its teeth fully twice as long as the tube. 26. *T. stenolobum.*
Calyx about half as long as the corolla, its teeth only slightly longer than the tube.
Banner acuminate; leaflets linear-lanceolate. 27. *T. attenuatum.*
Banner obtuse, minutely mucronate; leaflets oblong-lanceolate to elliptic. 28. *T. bracteolatum.*
Flowers not reflexed in fruit; bracts more conspicuous, lanceolate to subulate, long-attenuate, except in the first species.
Leaves as well as the whole plant densely silvery-white. 29. *T. anemophilum.*
Leaves green or brown, though somewhat silky.
Bracts narrow, 1-nerved; leaflets broadest at or below the middle.
Calyx-teeth only slightly longer than the tube; bracts glabrous, much exceeding the calyx-tube. 30. *T. lividum.*
Calyx-teeth fully twice as long as the tube; bracts pubescent, slightly if any exceeding the calyx-tube.
Banner white or ochroleucous, merely tinged with purple; wings and keel dark purple; pubescence rather loose. 31. *T. dasyphyllum.*
Banner as well as the other petals reddish purple; pubescence appressed. 32. *T. scariosum.*
Bracts broader, 3-nerved; leaflets broader above the middle. 33. *T. uintense.*

X. Andina.

One species. 34. *T. andinum.*

XI. Parryana.

Banner long-acute, much exceeding the wings; bracts ovate, exceeding the calyx, strongly purple-veined. 35. *T. salictorum.*
Banner blunt, slightly exceeding the wings.
Calyx-teeth only slightly unequal; bracts exceeding the calyces; upper stipules broadly obovate. 36. *T. Parryi.*
Upper calyx-teeth much shorter than the lower; bracts not exceeding the calyces; upper stipules ovate.
Peduncles 1–2 dm. long; bracts ovate. 37. *T. inaequale.*
Peduncles less than 1 dm. long; bracts obovate in outline. 38. *T. montanense.*

XII. Involucrata.

Perennials.
Banner white; wings and keel tipped with dark purple; calyx-teeth twice as long as the tube. 39. *T. spinulosum.*
Banner as well as the other petals purple; calyx-teeth a little longer than the tube.
Corolla 12–15 mm. long; involucres to about the middle. 40. *T. Fendleri.*
Corolla about 10 mm. long; involucres cleft to below the middle. 41. *T. oxydon.*
Annuals.
Involucres much shorter than the flowers, not scarious; teeth long.
Leaflets obovate or elliptic.
Flowers 7–8 mm. long. 42. *T. variegatum.*
Flowers more than 1 cm. long. 43. *T. subsalinum,*
Leaflets linear. 44. *T. oliganthum.*
Involucres almost equalling the flowers, scarious at least below, its teeth short or none.
Involucres glabrous, 8–10 mm. high, its lobes toothed; calyx-teeth ternately divided, with setiform branches. 45. *T. cyanthiferum.*
Involucres hairy, 5–7 mm. high, its lobes entire; calyx-teeth simple. 46. *T. microcephalum.*

XIII. Agraria.

One species. 47. *T. procumbens.*

5. MEDICÀGO (Tourn.) L. Medick, Alfalfa, Lucerne, Nonesuch.

Pod unarmed.
Perennial, erect; corolla violet or blue; fruit spirally coiled in 2–3 turns. 1. *M. sativa.*
Annual, prostrate; corolla yellow; fruit merely curved. 2. *M. lupulina.*
Pod prickly, densely spirally coiled, in 2–3 turns; corolla yellow. 3. *M. hispida.*

6. MELILÒTUS (Tourn.) Hill. Sweet Clover, Honey Clover.

Corolla white; banner a little longer than the wings. 1. *M. alba.*
Corolla yellow; banner about equalling the wings. 2. *M. officinalis.*

7. LÒTUS (Tourn.) L. Bird's-foot Trefoil. 1. *L. tenuis.*

8. ACMÍSPON Raf.

Leaves subsessile; petiolule of the terminal leaflet ascending. 1. *A. americanus.*
Leaves distinctly petioled; petiolule of the terminal leaflet reflexed, or at least spreading. 2. *A. elatus.*

9. HOSÁCKIA Dougl. Bird's-foot. 1. *H. bicolor.*

10. ANISOLÒTUS Bernh. DEER-WEED.

Annual; plant villous; flowers subsessile in the axils of the leaves. 1. *A. brachycarpus.*
Perennials; plant appressed-pubescent; flowers mostly several together, on a peduncle (except often in No. 2).
Leaflets closely crowded on the very short rachis, oblanceolate to linear; peduncles less than 5 cm. long; stem erect.
Inflorescence 1–2-flowered, usually subsessile in the axils of the leaves; calyx-teeth equalling the tube. 2. *A. Wrightii.*
Inflorescence 2–5-flowered, distinctly peduncled; calyx-teeth shorter than the tube. 3. *A. puberulus.*
Leaflets not crowded on the evident rachis; stem decumbent.
Flowers about 1 cm. long; peduncles 1–2 cm. long; leaflets linear-oblong. 4. *A. nummularius.*
Flowers 12–15 mm. long; peduncles 4–10 cm. long.
Leaflets linear to oblong; bracts longer than the calyx; pods divaricate or reflexed. 5. *A. longebracteatus.*
Leaflets obovate or cuneate; bracts shorter than the calyx; pods erect or ascending. 6. *A. rigidus.*

11. SYRMÀTIUM Vogel. 1. *S. decumbens.*

12. AMÓRPHA L. FALSE INDIGO, SHOE-STRINGS.

Tall shrub; leaflets 2–5 cm. long; pods usually 2-seeded; leaves petioled; pod curved. 1. *A. angustifolia.*
Low shrubs; leaflets 0.5–1.5 cm. long; pods 1-seeded.
Glabrous or nearly so; spikes usually solitary at the end of the branches; leaves petioled; pod straight. 2. *A. nana.*
Densely canescent; spikes usually clustered; leaves subsessile; pod curved. 3. *A. canescens.*

13. PSORÀLEA L. POMME DE PRAIRIE, POMME BLANCHE, BREAD-ROOT, INDIAN TURNIP.

Flowers small, less than 8 mm. long, in racemes or interrupted spikes; root not tuberous; pod indehiscent. (PSORALIDIUM.)
Stem-leaves reduced to scales. 1. *P. juncea.*
Stem leaves all 3–5-foliolate.
Flowers in racemes, *i. e.*, distinctly pedicelled.
Pods globose; corolla white, only the keel tipped with purple.
Racemes short and dense, elliptic or oblong; calyx-lobes obtuse.
Leaflets linear to lance-oblong; fruit glabrous or sparingly strigose.
Leaflets lance-oblong to linear. 2. *P. lanceolata.*
Leaflets narrowly linear. 3. *P. micrantha.*
Leaflets spatulate or obovate; fruit long-villous. 4. *P. Purshii.*
Racemes lax, elongate, calyx-lobes acute.
Leaves oblanceolate; pod densely villous. 5. *P. stenostachys.*
Leaves narrowly linear; pod strigose. 6. *P. stenophylla.*
Pods ovoid; corolla blue or purplish; raceme elongate, lax.
Leaflets from linear-oblanceolate to obovate; pods with short beaks. 7. *P. tenuiflora.*
Leaflets narrowly linear; pods with longer beaks. 8. *P. linearifolia.*
Flowers in interrupted spikes.
Leaves not silvery below; flowers about 6 mm. long; bracts minute. 9. *P. collina.*
Leaves silvery-white at least below; flowers 7–8 mm. long; bracts at least half as long as the calyx.
Leaflets oval; bracts lanceolate, acuminate; calyx not inflated in fruit. 10. *P. argophylla.*
Leaflets linear; bracts obovate; calyx inflated in fruit. 11. *P. digitata.*
Flowers large, over 1 cm. long, in dense, head-like spikes; plant with a deep-seated, tuberous, farinaceous root; pod long-beaked, circumscissile or bursting irregularly. (PEDIOMELUM.)
Tall, leafy and branched, usually over 4 dm. high; strigose throughout; lower calyx-teeth cuspidate-acuminate. 12. *P. cuspidata.*
Low and more simple, 1–3 dm. high; lower calyx-teeth not cuspidate-acuminate.
Plants with long scattered hairs, not cinereous; leaflets linear to obovate.
Stem and peduncles hirsute, with spreading pubescence; lower calyx-lobe not much larger than the rest. 13. *P. esculenta.*
Stem, short peduncles and pedicels, with appressed pubescence; lower calyx-lobe much broader than the rest. 14. *P. hypogaea.*
Plant cinereous, with short appressed pubescence; leaflets broadly obovate or rounded-spatulate.
Lowest calyx-lobe not much longer than the rest.
Petioles with appressed pubescence; corolla nearly 2 cm. long. 15. *P. megalantha.*
Petioles with spreading or reflexed hairs; corolla about 12 mm. long. 16. *P. mephitica.*
Lowest calyx-lobe obovate or spatulate, obtuse, much larger than the rest. 17. *P. castorea.*

14. PAROSÈLA Cav.

Wing- and keel-petals inserted at the base of the staminal tube; pods exceeding the calyx; shrubs. (XYLODALEA.)

Calyx-lobes shorter than the tube, the upper two much broader than the rest.
Leaflets 1–7, oblong or elliptic. 1. *P. Fremontii.*
Leaflets 5–11, linear or linear-oblanceolate. 2. *P. Johnsoni.*
Calyx-lobes equalling the tube, all lanceolate, nearly similar. 3. *P. amoena.*
Wing- and keel-petals adnate to or inserted on the staminal tube, some distance from the base; pod shorter than the calyx; mostly herbs, rarely shrubs (EUDALEA).
Stem and leaves glabrous.
Annual; spike dense, cylindric. 4. *P. alopecuroides.*
Perennial; spike either rather lax or few-flowered.
Plant herbaceous; spike lax, elongate, several-flowered; bracts obovate, persistent, enclosing the calyx. 5. *P. enneandra.*
Plant shrubby; spike head-like, 2–10-flowered, very short; bracts ovate, deciduous. 6. *P. formosa.*
Stem and leaves pubescent.
Calyx-lobes short, ovate, not subulate-tipped; spike lax; prostrate or decumbent villous herbs. 7. *P. lanata.*
Calyx-lobes subulate-tipped, longer than the tube; plants erect or decumbent, with a short cespitose caudex; spike dense.
Leaves 3-foliolate. 8. *P. Jamesii.*
Leaves 5-foliolate.
Stem low, 1–2 dm. high, decumbent at the base; spike sessile or short-peduncled. 9. *P. carnescens.*
Stem tall, 3–5 dm. high, with the upper leaves reduced and spike rather long-peduncled. 10. *P. aurea.*

15. PETALOSTÈMON Michx. PRAIRIE CLOVER.

Calyx glabrous except the teeth; corolla white.
Spikes compact; bracts longer than the buds; leaflets 1.5–2.5 cm. long. 1. *P. candidus.*
Spikes looser; bracts shorter than the buds; leaflets usually less than 1.5 cm. long. 2. *P. oligophyllus.*
Calyx pubescent.
Corolla white or yellow; spike long and compact.
Leaves glabrous; corolla white or ochroleucous. 3. *P. compactus.*
Leaves sparingly silky; corolla yellow. 4. *P. flavescens.*
Corolla rose or purple, very rarely white.
Leaflets mostly 5, linear or nearly so.
Pubescence of the calyx long silky-pilose; bracts lanceolate, acute; leaflets of the lower leaves oblong, obovate, or cuneate.
Bracts glabrous or short-pilose. 5. *P. Searlsiae.*
Bracts silky, long-pilose. 6. *P. ornatus.*
Pubescence of the calyx dense and short; bracts ovate, villous, with a long subulate glabrous acumination.
Leaflets linear, conspicuously glandular-dotted; bracts longer than the calyces.
Stem and leaves glabrous or sparingly hairy. 7. *P. purpureus.*
Stem and leaves densely villous. 8. *P. mollis.*
Leaflets spatulate-linear, not glandular-dotted; bracts shorter than the calyces. 9. *P. pubescens.*
Leaflets 7–17, oblong. 10. *P. villosus.*

16. ROBÍNIA L. LOCUST-TREE.

Inflorescence, leaves and fruit glabrous. 1. *R. Pseudacacia.*
Inflorescence and fruit hispid; leaves finely puberulent. 2. *R. neomexicana.*

17. PETÈRIA A. Gray.

Leaflets linear-elliptic or lanceolate, acute and mucronate, 2–6 mm. long, or wanting; corolla 12–15 mm. long. 1. *P. scoparia.*
Leaflets broadly elliptic, oval, or obovate, rounded and mucronate at the apex, 8–15 mm. long. 2. *P. Thompsonae.*

18. PHÀCA L. RATTLE-WEED, RATTLE-POD.

Upper suture of the pod not acute; pod circular or oval in cross-section.
Pod stipitate.
Pod long-stipitate, not mottled; stipe longer than the calyx.
Pod pendent; flowers ochroleucous. 1. *P. americana.*
Pod on an ascending stipe; flowers purplish. 2. *P. ampularia.*
Pod short-stipitate; stipe scarcely exceeding the calyx.
Pod not mottled, erect or ascending.
Pod ashy-strigose, with minute hairs.
Pods sulcate above; leaflets broad. 3. *P. Wetherillii.*
Pod not sulcate; leaflets narrow. 4. *P. allochroa.*
Pod glabrous.
Flowers purplish; racemes long-peduncled; pods about 2 cm. long. 5. *P. Eastwoodiae.*
Flowers white; racemes short-peduncled; pods 3–4 cm. long. 6. *P. lutosa.*
Pod mottled, spreading or reflexed.
Leaflets linear or none; plant grayish pubescent.
Terminal leaflet none, represented by the much produced rachis; lateral leaflets often also lacking. 7. *P. longifolia.*

Leaflets present; rachis not produced.
Stem canescent, 1–2 dm. high; calyx-teeth subulate. 8. *P. picta.*
Stem glabrous or nearly so, 3–5 dm. high; calyx-teeth triangular. 9. *P. Cusickii.*
Leaflets elliptic to broadly oval or obcordate.
Plant glabrous. 10. *P. artipes.*
Plant canescent. 11. *P. Hookeriana.*
Pod sessile.
Pod more than 12 mm. long.
Plant densely cespitose, almost stemless; pod 3.5–5 cm. long. 12. *P. megacarpa.*
Plant distinctly caulescent and leafy; pod 3 cm. long or less.
Whole plant glabrous. 13. *P. Wardii.*
Plant, including the pods, pubescent.
Calyx-teeth very short, scarcely one-third as long as the tube. 14. *P. subcinerea.*
Calyx-teeth subulate, fully as long as the tube.
Plant appressed-pubescent, cespitose and much branched.
Stem ascending.
Inflorescence scarcely equalling the leaves; pod 2–2.5 cm. long; corolla ochroleucous. 15. *P. Candolleana.*
Inflorescence exceeding the leaves; pod 12–15 mm. long; corolla purple. 16. *P. cerussata.*
Stem decumbent. 17. *P. serpens.*
Plant with short spreading pubescence; stem simple, elongate. 18. *P. Silerana.*
Pod 8–12 mm. long.
Stem slender and much branched, usually more than 1 dm. high; leaflets more than 5 mm. long, flat, oblong, oval, or obovate.
Leaflets 5–11 pairs.
Plant slightly strigose.
Pod ovoid; plant 3–6 dm. high; racemes many-flowered. 19. *P. Bodinii.*
Pod ellipsoid; plant usually less than 3 dm. high; racemes few-flowered. 20. *P. leptalea.*
Plant densely hirsutulous. 18. *P. Silerana.*
Leaflets 4–6 pairs; plant more or less grayish-pubescent; pod globose-ovoid. 21. *P. microcystis.*
Stem densely pulvinate-cespitose, with a thick caudex, only a few centimeters high; leaflets minute, linear or lanceolate, conduplicate, 1–4 mm. long.
Rachis of the leaves not spinose; pod slightly puberulent, mottled, 1 cm. long. 22. *P. jejuna.*
Rachis of the leaves spinose; pod white-pubescent, 4–6 mm. long. 23. *P. humillima.*
Upper suture of the pod straight or curved upwards, acute; pod in cross-section obovate, triangular-obovate, or slightly cordate.
Plant, including the pods, perfectly glabrous, 2 dm. high or more; pods stipitate, somewhat leathery.
Corolla ochroleucous; calyx-teeth nearly equalling the tube. 24. *P. Beckwithii.*
Corolla purple; calyx-teeth much shorter than the tube. 25. *P. artemisiarum.*
Plant, including the pods, more or less hairy; pods sessile.
Pods much over 1 cm. long, usually not mottled.
Pods strongly inflexed; flowers white or ochroleucous, tinged with purple. 26. *P. pubentissima.*
Pods not strongly incurved; upper suture straight or nearly so; flowers ochroleucous.
Plant strictly annual.
Plant cinereous, with short hairs; pods puberulent. 27. *P. annua.*
Plant, including the pods, grayish hoary. 28. *P. sabulonum.*
Plant perennial or at least biennial, cespitose, low.
Flowers mostly subsessile in the axils of the leaves; racemes if peduncled 2–3-flowered; leaflets mostly over 1 cm. long, appressed-hairy. 29. *P. elatiocarpa.*
Flowers in peduncled several-flowered racemes; leaflets mostly less than 1 cm. long, loosely hairy beneath, glabrate above. 30. *P. lotiflora.*
Pods about 1 cm. long, mottled; plant diffusely cespitose. 31. *P. sesquiflora.*

19. CÝSTIUM Stev.

Plant cespitose, less than 1 dm. high, canescent, nearly stemless; pod not curved. 1. *C. platytrope.*
Plant with elongate stems, 1–4 dm. high.
Plant silvery canescent-strigose; corolla pinkish. 2. *C. Coulteri.*
Plant glabrous or slightly strigose, not silvery.
Corolla purple. 3. *C. diphysum.*
Corolla white or yellowish, purple only at the tip.
Pod more than 1.5 cm. long.
Pod short-ovoid, only slightly curved. 4. *C. heliophilum.*
Pod elongate-ovoid, strongly curved.
Calyx-teeth at least half as long as the tube; corolla 8–9 mm. long. 5. *C. lentiginosum.*

Calyx-teeth about one-fourth as long as the tube; corolla about 12 mm. long. 6. *C. araneosum.*
Pod 1–1.5 cm. long. 7. *C. salinum.*

20. ÒNIX Stev. 1. *O. Mulfordae.*

21. GEOPRÚMNON Rydb. Buffalo Beans, Ground Plums, Buffalo Peas, Prairie Apples.

Pods pubescent, abruptly pointed. 1. *G. plattense.*
Pods glabrous, pointless.
Corolla purple; leaflets oblong to linear. 2. *G. crassicarpum.*
Corolla yellowish-white, with purple keel; leaflets oval or obovate. 3. *G. succulentum.*

22. ASTRÁGALUS (Tourn.) L. Loco Weed, Milk Vetch.

Plants cespitose, subscapose, villous-pubescent; pods sulcate on both sutures. I. Mollissimi.
Plants with elongate leafy stems.
Pods not sulcate or slightly so on the lower suture, round or nearly so in cross-section. II. Uliginosi.
Pod deeply sulcate on the lower suture, cordate or triangular in cross-section.
Leaves and stems strigose or glabrate; pods several-seeded. III. Hypoglottides.
Leaves and stem villous; pods few-seeded. IV. Spaldingiani.

I. Mollissimi.

Pod glabrous, deeply sulcate. 1. *A. mollissimus.*
Pod villous, slightly sulcate.
Calyx densely villous; leaflets 6–12 pairs.
Pods perfectly 2-celled; raceme elongate. 2. *A. Bigelovii.*
The cells of the pod confluent at the apex; raceme short. 3. *A. Thompsonae.*
Calyx sparingly nigrescent; leaflets 3–6 pairs. 4. *A. anisus.*

II. Uliginosi.

Pod straight or nearly so.
Calyx-tube 4–6 mm. long, 3–4 mm. wide.
Bracts linear-lanceolate, long-attenuate, the lower almost as long as the calyces; calyx-teeth all narrow, subulate, fully half as long as the tube; pod glabrous. 5. *A. canadensis.*
Bracts ovate to lanceolate, scarcely half as long as the calyces; calyx-teeth short, less than half as long as the tube, the upper broader; pod more or less hairy (except sometimes in the first).
Upper calyx-teeth only slightly broader than the lower; bracts lanceolate.
Calyx not black-hairy; pod not sulcate. 6. *A. oreophilus.*
Calyx more or less black-hairy; pods somewhat sulcate on the lower suture. 7. *A. Mortoni.*
Upper calyx-teeth about twice as broad as the lower, broadly triangular at the base; pod not sulcate. 8. *A. spicatus.*
Calyx-tube about 3 mm. long, less than 2 mm. wide. 9. *A. ursinus.*
Pod decidedly arcuate. 18. *A. palans.*

III. Hypoglottides.

Pod with appressed gray or black pubescence.
Calyx-teeth short and broad; corolla purple. 10. *A. terminalis.*
Calyx-teeth subulate.
Corolla purple or pink, seldom white; calyx-teeth much shorter than the tube. 11. *A. striatus.*
Corolla sulphur-yellow, white, or pinkish; calyx-teeth almost equalling the tube.
Leaflets elliptic, appressed-pubescent. 12. *A. sulphurescens.*
Leaflets broadly obovate; pubescence looser. 13. *A. oreganus.*
Pod villous with long spreading hairs.
Corolla ochroleucous; bracts broadly spatulate to linear, obtuse. 14. *A. virgultulus.*
Corolla purple; bracts ovate-lanceolate or oblong-lanceolate, often acutish.
Calyx black-hairy; teeth decidedly shorter than the tube. 15. *A. goniatus.*
Calyx not black-hairy; teeth about equalling the tube. 16. *A. agrestis.*

IV. Spaldingiani.

One species. 17. *A. Spaldingii.*

23. HAMÒSA Medic.

Plant acaulescent, silvery white.
Racemes several-flowered; calyx-teeth triangular-lanceolate, about one-third as long as the tube. 1. *H. scaposa.*
Racemes 1–2-flowered; calyx-teeth elongate-lanceolate, more than half as long as the tube. 2. *H. calycosa.*
Plant caulescent, not silvery.
Legume curved.
Plant glabrous or strigose.
Pod less than 3 mm. wide, not mottled; corolla 5–6 mm. long.
Leaflets lanceolate or oblong; pod finely strigose. 3. *H. austrina.*
Leaflets cuneate or oblong, emarginate; pod glabrous. 4. *H. Nuttalliana.*

Pod 6 mm. wide, mottled; corolla about 1.5 cm. long. 5. *H. amplexa.*
Plant hirsute; pod over 4 mm. wide. 6. *H. malaca.*
Legume straight.
Racemes short, subcapitate; corolla light bluish purple; leaflets oblong to obcordate, green. 7. *H. leptocarpa.*
Racemes elongate, lax; corolla cream-colored; leaflets narrowly oblong or linear, grayish strigose. 8. *H. atratiformis.*

24. TÌUM Medic.

Stipe exceeding the calyx; pod not incurved.
Pod not black-hairy; corolla white or ochroleucous.
Pod erect, glabrous.
Stipe much longer than the calyx. 1. *T. eremiticum.*
Stipe scarcely exceeding the calyx.
Pod with a partial septum.
Pod glabrous; stipe 3–4 mm. long. 2. *T. atropubescens.*
Pod strigose; stipe 1 mm. long. 3. *T. obscurum.*
Pod without septum. 4. *T. arrectum.*
Pod reflexed.
Plant villous; pod cordate in cross-section. 5. *T. Drummondii.*
Plant appressed-pubescent or glabrous; pod more or less triangular or inverted V-shaped in cross-section.
Pod 2–3 cm. long; corolla 15–20 mm. long.
Calyx not black-hairy; pod straight. 6. *T. racemosum.*
Calyx black-hairy; pod arcuate. 7. *T. scopulorum.*
Pod less than 1.5 cm. long; flowers 6–8 mm. long. 8. *T. Rusbyi.*
Pod black-hairy; corolla violet or purple. 9. *T. alpinum.*
Stipe shorter than the calyx or almost none; pod incurved.
Pod mottled; plant green, very slender.
Stem slender, spreading.
Raceme 1–5-flowered, short; leaflets obovate or orbicular. 10. *T. sparsiflorum.*
Raceme 5–10-flowered; leaflets linear. 11. *T. owyheense.*
Stems stout, erect; raceme 5–15-flowered.
Leaflets obovate or orbicular. 12. *T. variegatum.*
Leaflets narrowly elliptic. 13. *T. naturitense.*
Pod not mottled; plant cinereous.
Pod appressed-pubescent. 14. *T. humistratum.*
Pod hirsute-villous, with spreading hairs. 15. *T. desperatum.*

25. DIHÓLCOS Rydb.

Pod glabrous; body about 1.5 cm. long; upper calyx-teeth 3–4 mm. long; corolla white. 1. *D. decalvans.*
Pod strigose; upper calyx-teeth less than 3 mm. long.
Body of the pod 12–15 mm. long; corolla usually purple. 2. *D. bisulcatus.*
Body of the pod rarely 10 mm. long; corolla white or straw-colored, only the keel sometimes tipped with purple.
Pod distinctly cross-ribbed.
Corolla more than 1 cm. long; pod very acute at both ends; stipe 5 mm. long. 3. *D. scobinatulus.*
Corolla less than 1 cm. long; pod obtusish or abruptly acuminate at both ends; stipe 3 mm. long. 4. *D. Haydenianus.*
Pod not cross-ribbed; corolla 6 mm. long. 5. *D. micranthus.*

26. JONESIÉLLA Rydb. 1. *J. asclepiadoides.*

27. RYDBERGIÉLLA Fedde & Sydow.

Pod with a broad partition, almost 2-celled, except at the apex. 1. *R. scaphoides.*
Pod with a narrow, sometimes obsolete partial partition.
Stipe of the pod 4–8 mm. long.
Leaflets oblanceolate or oblong. 2. *R. arcta.*
Leaflets obovate. 3. *R. Preussii.*
Stipe of the pod 1–2 mm. long; leaflets oblong to oval.
Plant glabrous; leaflets oblong, retuse. 4. *R. praelonga.*
Plant hispidulous-strigose on the upper parts of the stem and the lower surface of the leaves. 5. *R. Pattersonii.*

28. CTENOPHÝLLUM Rydb.

Leaflets narrow.
Leaflets filiform or nearly so, 2–4 cm. long, 1–2 mm. wide. 1. *C. pectinatum.*
Leaflets linear, 2–3 cm. long, 3–4 mm. wide. 2. *C. Grayi.*
Leaflets oblong to broadly obovate. 3. *C. adanum.*

29. CNEMIDOPHÀCOS Rydb.

Pod with a rudimentary partition. 1. *C. reventoides.*
Pod without a partition.
Calyx densely black-villous. 2. *C. reventus.*
Calyx not black-hairy or with a few scattered black hairs.
Calyx strigose with rather short hairs.

Corolla yellow. 3. *C. flavus.*
Corolla pinkish. 4. *C. confertiflorus.*
Calyx silky-pilose or hirsute with long loose hairs.
Corolla purple; calyx-teeth 4–5 mm. long. 5. *C. argillosus.*
Corolla ochroleucous; calyx-teeth 2 mm. long. 6. *C. urceolatus.*

30. XYLOPHÀCOS Rydb. Sheep-pod.

Pod strigose or glabrous.
Exocarp of the fruit not spongy; stem evident, but often short.
Pod more or less curved.
Plant sparingly hairy or glabrous, scarcely canescent; stem usually more or less elongate.
Calyx-tube about 10 mm. long, white-hairy; plant sparingly silky. 1. *X. stipularis.*
Calyx-tube 5–8 mm. long, black-hairy; plant strigose or glabrous.
Pod 2–2.5 cm. long, abruptly acute at both ends. 2. *X. cuspidocarpus.*
Pod 2.5–4 cm. long, long-acuminate at both ends. 3. *X. cibarius.*
Plant densely canescent, with white silky appressed hairs; stem low, decumbent.
Pod elongate; dorsal suture distinctly sulcate.
Pod tapering at the base, not very thick.
Calyx-teeth subulate, about half as long as the tube. 4. *X. aragalloides.*
Calyx-teeth less than half as long as the tube. 5. *X. amphioxys.*
Pod not tapering at the bases.
Calyx with black hairs; leaflets oval; corolla white or cream-colored. 6. *X. eurekensis.*
Calyx without black hairs; leaflets rounded-obovate; corolla purple. 7. *X. Shortianus.*
Pod short-ovoid; neither suture distinctly sulcate.
Pod mottled.
Pod very strongly curved and vertically flattened at the middle; leaflets oval, acute, strigose. 8. *X. Zionis.*
Pod slightly curved; leaflets oblong, rounded or truncate at the apex, villous. 9. *X. puniceus.*
Pod not mottled, slightly curved and turgid.
Calyx-teeth subulate, about half as long as the tube; leaflets oblong-oval. 10. *A. argophyllus.*
Calyx-teeth lanceolate, one-fourth as long as the tube; leaflets obovate. 11. *X. uintensis.*
Pod straight or nearly so; plant canescent.
Pod obcompressed, somewhat triangular; ventral suture only prominent. 12. *X. vespertinus.*
Pod compressed; both sutures prominent.
Corolla purple; calyx with black hairs. 13. *X. missouriensis.*
Corolla white or ochroleucous with purple-tipped keel; calyx without black hairs. 14. *X. cymboides.*
Exocarp of the fruit spongy at least in age; plant sub-acaulescent, less than 5 cm. high.
Leaflets 7–11, rounded-obovate, obtuse. 15. *X. pygmaeus.*
Leaflets 1–3, broadly lanceolate, acute. 16. *X. musinensis.*
Pod villous.
Pod densely woolly, short-ovoid; plant canescent.
Pubescence of the leaves strictly appressed.
Leaflets elliptic to obovate; calyx-teeth one-fourth as long as the tube.
Leaflets obovate, obtusish; peduncles much shorter than the leaves. 17. *X. Newberryi.*
Leaflets oblanceolate, acute; peduncles about equalling the leaves. 18. *X. consectus.*
Leaflets broadly obovate-cuneate, rounded, truncate, or retuse at the apex; calyx-teeth half as long as the black-villous tube. 19. *X. Watsonianus.*
Pubescence of the leaves loosely woolly.
Stems 1 dm. long or less; bracts ovate or oblanceolate, only slightly exceeding the pedicels.
Leaflets broadly obovate, rounded at the apex; plant densely floccose. 20. *X. utahensis.*
Leaflets oblanceolate or oblong, acute; plant hirsute-villous.
Corolla ochroleucous; only the keel purple-tipped. 21. *X. Purshii.*
Corolla purple. 22. *X. glareosus.*
Stems 2–4 dm. high; bracts subulate, at least half as long as the calyx. 23. *X. inflexus.*
Pod sparingly villous, elongate; plant not canescent. 24. *X. Parryi.*

31. MICROPHÀCOS Rydb.

Pod slightly sulcate on the lower suture, transversely veined; leaflets narrowly linear-obtuse. 1. *M. parviflorus.*
Pod merely flattened on the lower suture, cross-wrinkled; leaflets linear-oblong or linear, cuneate, truncate or emarginate. 2. *M. microlobus.*

32. PTEROPHÀCOS Rydb. 1. *P. tetrapterus.*

33. ATELOPHRÁGMA Rydb.

Pod stipitate, flat.
Partial partition broad, making the pod almost 2-celled. 1. *A. Arthuri.*

Partial partition narrow, less than one-third the width of the pod.
Pod long-stipitate, glabrous at least in age.
Plant loosely short-villous. 2. *A. aboriginum.*
Plants appressed-silky or glabrous.
Leaflets oblong. 3. *A. Forwoodii.*
Leaflets linear.
Plant grayish silky. 4. *A. lineare.*
Plant glabrous or with a few scattered hairs. 5. *A. glabriusculum.*
Pod short-stipitate, hairy.
Upper leaves not reduced; pod black-hairy. 6. *A. Macounii.*
Upper leaves reduced, often unifoliolate; pod not black-hairy. 7. *A. ibapense.*
Pod sessile, more turgid.
Racemes many-flowered; leaflets oblong; partition of the pod narrow.
Racemes elongate; pod short-obovoid. 8. *A. elegans.*
Racemes short; pod oblong. 9. *A. Shearii.*
Racemes few-flowered; leaflets linear; partition of the pod broad. 10. *A. Brandegei.*

34. HOMÁLOBUS Nutt.

Legumes decidedly flattened laterally.
Leaves simple or some of them rarely 3-foliolate; plants pulvinate-cespitose; pod sessile. I. SIMPLICIFOLII.
Leaves several-foliolate.
Pod sessile or short-stipitate; stipe seldom exceeding the calyx.
Legume oval, ovate, broadly oblong, or elliptic.
Pod without long black hairs. II. TENELLI.
Pod with long black hairs. III. DEBILES.
Legume linear, 1.5 cm. long or longer. IV. CAMPESTRES.
Pod long-stipitate; stipe decidedly longer than the calyx.
Calyx not gibbous at the base, less than half as long as the corolla; pod membranous; leaflets linear or filiform. V. STENOPHYLLI.
Calyx strongly gibbous at the base, more than half as long as the corolla; pod more coriaceous. VI. COLLINI.
Legumes nearly terete.
Pod sessile or short-stipitate; stipe if any shorter than the calyx. VII. FLEXUOSI.
Pod long-stipitate; stipe longer than the calyx. VIII. MACROCARPI.

I. SIMPLICIFOLII.

Calyx-teeth about half longer than the calyx-tube; corolla ochroleucous or whitish.
Calyx glabrous. 1. *H. ligulatus.*
Calyx pubescent.
Leaves almost filiform, sparingly hairy, pungent-pointed; pods mottled. 2. *H. exilifolius.*
Leaves narrowly linear-oblanceolate, canescent, not pungent; pods not mottled. 3. *H. simplicifolius.*
Calyx-teeth about as long as the tube; corolla purple or pink.
Peduncles 1-flowered; bracts subulate, longer than the flowers. 4. *H. uniflorus.*
Peduncles 3–10-flowered; bracts ovate to narrowly lanceolate, shorter than the flowers.
Pods long-acute; bracts narrowly lanceolate; leaves usually narrowly oblanceolate. 5. *H. caespitosus.*
Pods abruptly acute; bracts short, ovate to lanceolate, very scarious; leaves oblanceolate or spatulate. 6. *H. brachycarpus.*

II. TENELLI.

Pod strictly sessile
Leaflets narrowly linear, often wanting. 8. *H. lancelarius.*
Leaflets oblong to oval.
Stems densely cespitose, 1–2 dm. high; racemes short, few-flowered.
Racemes 2–6-flowered, shorter than the leaves; leaflets oblong to oblanceolate, acute, canescent. 9. *H. vexilliflexus.*
Racemes 5–12-flowered, exceeding the leaves; leaflets oblong to elliptic, green, glabrate above. 10. *H. miser.*
Stems more simple, 2 dm. high or more; racemes elongate.
Pods erect, on long pedicels. 11. *H. grallator.*
Pods spreading or reflexed, on short pedicels.
Pods glabrous; plant canescent. 12. *H. wingatanus.*
Pods hairy; plant green. 13. *H. Clementis.*
Pod short-stipitate.
Corolla white, tinged with purple.
Both sutures of the pod curved. 14. *H. acerbus.*
Lower suture of the pod straight. 15. *H. Dodgeanus.*
Corolla ochroleucous.
Legume glabrous.
Stipe rarely exceeding the tube of the calyx; leaves usually spreading in age; leaflets oblong to oval, obtuse and mucronate. 16. *H. dispar.*
Stipe of the mature legume usually exceeding the calyx-teeth; leaves strongly ascending; leaflets narrowly linear to linear-oblong, mostly acute.
Stipe 3–4 mm. long; leaflets linear or linear-oblong; stem usually conspicuously strigose; calyx-teeth half as long as the tube. 17. *H. tenellus.*

Stipe 5–7 mm. long; leaflets narrowly linear; stem glabrous or nearly so; calyx-teeth usually nearly equalling the tube. 18. *H. stipitatus.*
Legume strigose. 19. *H. strigulosus.*

III. Debiles.

Stem very slender, filiform and decumbent; pod sessile, ovate or oval. 20. *H. debilis.*
Stem erect or ascending; pods stipitate and long-acute at both ends. 21. *H. Bourgovii.*

IV. Campestres.

Corolla ochroleucous, usually without any tinge of purple; upper leaves reduced to filiform phyllodes or the rachis greatly produced, without a terminal leaflet; canescent rush-like plants, with deep-seated roots and stem branched below the surface; calyx-lobes less than half as long as the tube.
Calyx more or less black-hairy; legumes tapering towards the base.
Calyx-lobes subulate, much longer than broad; leaves linear-subulate to linear, very acute. 22. *H. campestris.*
Calyx-teeth about as broad as long, triangular; leaflets linear or linear-oblong, obtuse. 23. *H. junciformis.*
Calyx white-hairy; teeth triangular; legumes linear; leaflets, if any, narrowly linear to filiform. 24. *H. junceus.*
Coralla white, pink, purplish, or rarely ochroleucous, at least the keel tipped with dark purple; terminal leaflet usually well developed; leafy plants with a cespitose caudex.
Legume strigose, rarely becoming glabrate in age.
Legume arcuate.
Leaflets 5; plant pulvinate-cespitose. 7. *H. detritalis.*
Leaflets 7–11; plant cespitose, decumbent, but not pulvinate. 25. *H. decumbens.*
Legume straight, or the end slightly curved upwards in *H. oblongifolius.*
Leaflets strigose on both sides, usually densely canescent.
Leaflets narrowly linear or narrowly lance-linear.
Calyx-teeth almost as long as the tube; corolla purplish; plant 2–4 dm. high. 26. *H. strigosus.*
Calyx-teeth much shorter than the tube; corolla ochroleucous, only the keel tipped with purple; plant less than 2 dm. high. 27. *H. tenuifolius.*
Leaflets narrowly lanceolate or lance-oblong, 4–8 mm. long, 1–2.5 mm. wide; plant less than 1 dm. high. 28. *H. divergens.*
Leaflets usually glabrous above, green.
Calyx white-hairy, its teeth one-third as long as the tube; leaflets linear to lance-oblong; racemes long and lax. 29. *H. serotinus.*
Calyx usually black-hairy, its teeth fully half as long as the tube.
Legumes 2–2.5 cm. long; corolla about 1 cm. long; leaflets ample; plant erect, 2–4 dm. high.
Leaflets elliptic or oblong, obtuse, the terminal one short-stalked and similar to the rest; lower suture of the legume decidedly curved. 30. *H. oblongifolius.*
Leaflets lanceolate or oblanceolate, somewhat falcate, the terminal one long-stalked, longer and tapering into the rachis without a distinct articulation. 31. *H. decurrens.*
Legumes less than 2 cm. long; corolla 6–8 mm. long; leaflets small, less than 1 cm. long; plant decumbent-cespitose, less than 2 dm. high.
Leaflets 1–5, the terminal narrowly oblanceolate, falcate, gradually tapering into the rachis. 32. *H. paucijugus.*
Leaflets 7–17, the terminal one resembling the rest, short-stalked.
Legumes linear with parallel sutures, 3 mm. wide. 33. *H. microcarpus.*
Legumes obliquely oblanceolate, fully 3.5 mm. wide near the apex. 34. *H. humilis.*
Legume glabrous from the beginning.
Legumes about 1.5 cm. long; calyx-teeth less than half as long as the tube; leaflets linear or narrowly lance-linear. 35. *H. Palliseri.*
Legumes 2–2.5 cm. long; calyx-teeth more than half as long as the tube; leaves lanceolate to oval. 36. *H. hylophilus.*

V. Stenophylli.

Calyx-teeth obtuse; leaflets many, the terminal one present. 37. *H. stenophyllus.*
Calyx-teeth very acute; leaflets few, the terminal one wanting or continuous with the rachis. 38. *H. Episcopus.*

VI. Collini.

Pod straight. 39. *H. collinus.*
Pod curved one-half to two-thirds of a circle. 40. *H. curvicarpus.*

VII. Flexuosi.

Pod oblong, over 5 mm. in diameter.
Inflorescence short; flowers about 15 mm. long; pod glabrous. 41. *H. Hallii.*
Inflorescence elongate and lax; flowers about 10 mm. long; pod pubescent. 42. *H. Fendleri.*
Pod linear, 2–3 mm. in diameter.
Pod abruptly contracted into a short or obsolete stipe.

Stem decumbent; stipe minute or obsolete. 43. *H. flexuosus.*
Stem erect; stipe almost equalling the calyx. 44. *H. proximus.*
Pod gradually tapering into the short stipe. 45. *H. Salidae.*

VIII. MACROCARPI.

One species. 46. *H. macrocarpus.*

35. KENTRÓPHYTA Nutt.

Stipules united only at the base, more or less herbaceous.
Plant 3–4 dm. high, usually erect; stipules lanceolate, with long spinulose tips. *1. K. impensa.*
Plant low; stipules lance-subulate, not spinulose-tipped. 2. *K. viridis.*
Stipules united for about half their length, scarious.
Leaflets linear-filiform, scarcely narrowed at the base; corolla ochroleucous, subsessile in the axils of the leaves. 3. *K. montana.*
Leaflets lanceolate or oblanceolate, distinctly narrowed at the base.
Corolla ochroleucous, about 4 mm. long, the keel usually purple-tipped; leaflets less than 5 mm. long.
Flower-clusters subsessile or short-peduncled; calyx-lobes shorter than the tube.
Leaves short-hairy; stipules with long spreading tips; leaflets about 3 mm. long. 4. *K. minima.*
Leaflets long-hairy; stipules not with spreading tips; leaflets 4–5 mm. long. 5. *K. Wolfii.*
Flower-clusters on peduncles much exceeding the leaves; calyx-lobes equalling or exceeding the tube. 6. *K. tegetaria.*
Corolla purple, about 6 mm. long; leaflets over 5 mm. long. 7. *K. aculeata.*

36. OROPHÀCA (T. & G.) Britton.

Flowers sessile in the axils of the leaves, 12 mm. or more long; corolla ochroleucous; calyx-tube longer than the teeth; plant pulvinate-cespitose.
Corolla 2 cm. or more long, glabrous; calyx-tube cylindrical, more than thrice as long as the teeth. 1. *O. caespitosa.*
Corolla 15–18 mm. long, pubescent on the outside; calyx-tube short-cylindric, about twice as long as the teeth. 2. *O. argophylla.*
Flowers in small, peduncled 1–3-flowered racemes, purple or turning yellowish in age, less than 10 mm. long; calyx-tube campanulate, not longer than the tube-teeth.
Plant pulvinate-cespitose; flowers 8–10 mm. long; inflorescence not exceeding the leaves.
Flowers about 10 mm. long; pods puberulent. 3. *O. tridactylica.*
Flowers about 8 mm. long; pods hoary. 4. *O. aretioides.*
Plant broadly cespitose, with prostrate branches; flowers about 6 mm. long; peduncles usually exceeding the leaves; pods hoary. 5. *O. sericea.*

37. ARAGÁLLUS Necker. LOCO-WEED.

Stipules adnate to the petioles only slightly at the base; pods pendent, 1-celled, many times exceeding the calyx; plant often caulescent. I. DEFLEXI.
Stipules decidedly adnate to the petioles; pods not pendent; plant acaulescent.
Leaves strictly pinnate; leaflets opposite.
Fruiting calyx inflated, enclosing the fruit; plants densely cespitose, less than 1.5 dm. high. II. NANI.
Fruiting calyx not inflated, much exceeded by the pod.
Inflorescence 1–3-flowered; plants dwarf, pulvinate.
Pods inflated, 1-celled, ovoid. III. INFLATI.
Pods not inflated, oblong, almost 2-celled. IV. PARRYANI.
Inflorescence many-flowered; plants mostly over 1.5 dm. high, not pulvinate; pod oblong, not inflated. V. CAMPESTRES.
Leaflets verticillate. VI. VERTICILLARES.

I. DEFLEXI.

Plant more or less caulescent; racemes at least in fruit elongate; pods 1.5–1.8 cm. long. *1. A. deflexus.*
Plant subacaulescent; racemes short and head-like; pods about 1 cm. long. *2. A. foliolosus.*

II. NANI.

Peduncles scarcely exceeding the leaves, 1–3-flowered; bracts broadly ovate.
Leaflets 5–10 mm. long; corolla 20–25 mm. long. 3. *A. multiceps.*
Leaflets 3–6 mm. long; corolla about 15 mm. long. 4. *A. minor.*
Peduncles decidedly exceeding the leaves, many-flowered; bracts lanceolate or ovate-lanceolate.
Pubescence of the peduncles appressed or merely ascending; pods included in the calyx.
Peduncles erect, strict; spike oblong, over 2 cm. long.
Corolla yellow or whitish, more than 2 cm. long. 5. *A. collinus.*
Corolla purple, less than 2 cm. long. 6. *A. Blankinshipii.*
Peduncles ascending, curved; spike subcapitate. 7. *A. nanus.*
Pubescence of the peduncles loosely spreading; pods usually somewhat exserted. 8. *A. Lagopus.*

III. INFLATI.

Leaflets 11–23.
Leaflets sparingly appressed-hirsute. 9. *A. podocarpus.*

Leaflets densely canescent. 10. *A. Hallii.*
Leaflets 5–11, densely canescent. 11. *A. oreophilus.*

IV. Parryani.

One species. 12. *A. Parryi.*

V. Campestres.

Plant not viscid.
Corolla purple, rarely white.
Calyx with spreading hairs.
Calyx white-hairy; corolla usually light purple.
Plant loosely pubescent; peduncles with long spreading hairs. 8. *A. Lagopus.*
Plant silky-canescent; peduncles with appressed hairs.
Plant low, densely cespitose; peduncles ascending, curved, less than 5 cm. high; spike capitate. 13. *A. argophyllus.*
Plant taller, over 1 dm. high; spike elongate.
Calyx long-hairy; wings broad. 14. *A. Besseyi.*
Calyx short-hairy; wings narrow. 21. *A. albertinus.*
Calyx black-hairy; corolla dark, bluish purple.
Plant white or grayish villous. 15. *A. atropurpureus.*
Plant silky, with appressed hairs, green. 16. *A. melanodontus.*
Calyx with appressed hairs.
Legumes about 3 cm. long, short-stipitate and long-acuminate; corolla over 2 cm. long. 17. *A. Bigelovii.*
Legume 2 cm. long or less, sessile.
Legumes villous, almost 2-celled; caudices densely white-hairy; corolla 12 mm. long. 18. *A. plattensis.*
Legumes appressed-silky or short-hairy; caudices not conspicuously white-hairy.
Legume nearly 2-celled; leaves white-silky.
Corolla 12–15 mm. long; wings slightly emarginate. 19. *A. monticola.*
Corolla about 2 cm. long; wings broadly and deeply emarginate. 20. *A. sericeus.*
Legumes only half 2-celled.
Leaves white-silky beneath; corolla 15 mm. long; pod ascending. 21. *A. albertinus.*
Leaves green or only slightly silky.
Legumes spreading; leaves elliptic or oblong; corolla 15 mm. long. 22. *A. dispar.*
Legumes erect or strongly ascending; leaflets lanceolate or linear-lanceolate, very acute.
Leaves spreading; pod 15 mm. long, abruptly contracted into a short spreading beak; corolla 15 mm. long. 23. *A. angustatus.*
Leaves erect; pod 20 mm. long, long-acuminate, nearly straight; corolla 18–20 mm. long. 24. *A. Lambertii.*
Corolla yellow, ochroleucous or white, with a purple spot on the keel.
Peduncles decumbent, curved, 1 dm. long or less. 25. *A. alpicola.*
Peduncles erect, 2 dm. high or more.
Peduncles with long loose hairs. 26. *A. villosus.*
Peduncles appressed-hairy.
Flowers 12–15 mm. long.
Lower leaves with conspicuously shorter and broader leaflets; flowers more or less spreading. 22. *A. dispar.*
Lower leaves similar to the upper or nearly so; flowers strongly ascending. 27. *A. gracilis.*
Flowers 18–25 mm. long; pods coriaceous.
Corolla yellow; banner and wings narrower than in the next, slightly notched; legume nearly 2-celled. 28. *A. spicatus.*
Corolla white or straw-colored, banner and wings fully 1 cm. wide, deeply notched; legume half 2-celled. 29. *A. albiflorus.*
Plant more or less viscid.
Calyx not black-hairy; pods abruptly acuminate; base of the plant with long yellow hairs. 30. *A. viscidus.*
Calyx black-hairy; pods long-acuminate; base of the plant not yellow-hairy. 31. *A. viscidulus.*

VI. Verticillati.

Bracts usually shorter than the flowers.
Leaflets lance-oblong to elliptic, densely silky-pubescent. 32. *A. Richardsonii.*
Leaflets linear-lanceolate, rather sparingly silky. 33. *A. galioides.*
Bracts much exceeding the flowers. 34. *A. splendens.*

38. GLYCYRRHÌZA (Tourn.) L. Liquorice. 1. *G. lepidota.*

39. HEDÝSARUM (Tourn.) L. Hedysarum.

Calyx-teeth shorter than the tube; reticulations of the pods polygonal.
Corolla sulphur-yellow; fruit glabrous. 1. *H. sulphurescens.*
Corolla purple, rose, or rarely white.
Fruit glabrous, except as to a few hairs on the margins; internodes 6–8 mm. long. 2. *H. americanum.*
Fruit distinctly appressed-pubescent; internodes 8–15 mm. long.

Corolla 12–15 mm. long; bracts linear-subulate, 5 mm. or more long.
Leaflets oblong, elliptic, or oval, less than 3 cm. long. 3. *H. boreale.*
Leaflets lanceolate, fully 3 cm. long. 4. *H. lancifolium.*
Corolla 15–20 mm. long; bracts lanceolate, 2–4 mm. long. 5. *H. marginatum.*
Calyx-teeth subulate, longer than the tube; reticulations of the pods transversely elongate, usually reaching from the middle to the margins, without cross-veins.
Flowers 15–20 mm. long.
Calyx sparingly strigose; loments with 4–7 internodes; nodes more than half as wide as the internodes. 6. *H. Mackenzii.*
Calyx canescent; loments with 2–5 internodes; nodes less than half as broad as the internodes. 7. *H. utahense.*
Flowers 10–15 mm. long.
Leaves glabrous above, at least in age.
Leaflets elliptic-oblong, not fleshy; flowers 12–15 mm. long, purple; bracts lanceolate-subulate, 3–5 mm. long; internodes of the loments 3–5. 8. *H. pabulare.*
Leaflets linear-oblong, somewhat fleshy; flowers about 10 mm. long, rose-purple; bracts lanceolate, 1.5–2 mm. long; internodes of the fruit 1–3. 9. *H. carnosulum.*
Leaves canescent on both sides. 10. *H. cinerascens.*

40. **ONOBRŸCHIS** Scop. Sand-foin. 1. *O. Onobrychis.*

41. **MEIBÒMIA** Heister. Tick-trefoil, Beggar's Ticks.

Leaflets neither coriaceous nor strongly reticulate beneath. 1. *M. canadensis.*
Leaflets coriaceous, strongly reticulate beneath. 2. *M. illinoensis.*

42. **VÍCIA** L. Vetch, Wild Pea.

Racemes 3–40-flowered; flowers 1–2.5 cm. long.
Racemes one-sided, dense, 15–40-flowered. 1. *V. cracca.*
Racemes lax, 3–10-flowered.
Leaflets linear to oblong; stipules usually narrow, semi-sagittate and often entire.
Leaves decidedly pubescent, rather thick and strongly veined.
Stem low; leaflets linear to oblong. 2. *V. trifida.*
Stem tall; leaflets oblong or elliptic, only those of the lower leaves sometimes linear. 3. *V. oregana.*
Leaves glabrous or slightly pubescent when young.
Leaflets elongate, narrowly linear; plant low and erect. 4. *V. sparsifolia.*
Leaflets, at least the upper ones, oblong or linear-oblong; plant tall and climbing. 5. *V. dissitifolia.*
Leaflets broad; stipules broadly semi-sagittate or semi-orbicular in outline, sharply toothed.
Leaflets usually oval, thin and not strongly veined, mostly entire and acute or rounded at the apex. 6. *V. americana*
Leaflets obovate-cuneate, firmer and more strongly veined, truncate and toothed at the apex. 7. *V. pumila.*
Racemes 1–2-flowered.
Flowers 1–1.8 cm. long, subsessile in the axils; annual. 8. *V. angustifolia.*
Flowers 6–8 mm. long, on a distinct peduncle; perennial. 9. *V. producta.*

43. **LÁTHYRUS** (Tourn.) L. Vetchling.

Corolla purple.
Stem winged; leaflets linear, lanceolate, or oblong; flowers about 15 mm. long. 1. *L. palustris.*
Stem wingless.
Racemes 1-flowered. 11. *L. Torreyi.*
Racemes several- to many-flowered.
Tendrils much reduced; stem mostly erect.
Leaflets 1 or 2 pairs; flowers 8–10 mm. long.
Leaflets narrowly linear. 2. *L. Sandbergi.*
Leaflets oval or oblong. 3. *L. bijugatus.*
Leaflets 3 or 6 pairs; flowers 20–25 mm. long.
Plant glabrous or nearly so. 4. *L. ornatus.*
Plant decidedly villous-pubescent. 5. *L. incanus.*
Tendrils usually well developed; plant more or less climbing.
Corolla less than 18 mm. long.
Leaflets linear to oblong-elliptic, thick, veiny.
Leaflets oblong-elliptic. 6. *L. coreaceus.*
Leaflets linear. 7. *L. graminifolius.*
Leaflets broadly oval or ovate.
Tendrils usually 3-cleft; leaflets moderately firm, strongly veined.
Stipules large, often half as long as the small, 1–3 cm. long leaflets. 8. *L. Schaffneri.*
Stipules very small in comparison with the large 2–7 cm. long leaflets. 9. *L. venosus.*
Tendrils simple; leaflets not strongly veined. 10. *L. Nuttallii.*
Corolla 2 cm. long or more.
Stipules large and broad, about half as long as the leaflets.
Leaflets not linear.
Leaflets rounded-oval, obtuse or rounded and mucronate at the apex. 12. *L. utahensis.*

Leaflets elliptic, acute at both ends, cuspidate at the apex. 13. *L. pauciflorus.*
Leaflets narrowly linear. 14. *L. tenuior.*
Stipules narrow, less than half as long as the leaflets.
Leaflets elliptic to oval. 15. *L. decaphyllus.*
Leaflets linear-oblong or oblanceolate. 16. *L. brachycalyx.*
Corolla white or yellowish.
Tendrils well developed.
Stipules large and broad, often half as long as the leaflets; corolla about 15 mm. long. 17. *L. ochroleucus.*
Stipules smaller, much less than half as long as the leaflets; corolla about 20 mm. long. 18. *L. laetivirens.*
Tendrils reduced; stipules narrow and small.
Corolla about 15–20 mm. long.
Leaflets ovate or oval or obovate. 19. *L. obovatus.*
Leaflets linear or lance-linear. 4. *L. ornatus.*
Corolla 10–15 mm. long.
Leaflets oval. 20. *L. leucanthus.*
Leaflets linear. 21. *L. arizonicus.*

44. ÀPIOS Moench. Ground-nut. 1. *A. Apios.*

45. STROPHOSTŸLES Ell. Wild Bean. 1. *S. pauciflora*

Family 66. **GERANIACEAE.** Geranium Family.

Carpels rounded, their tails (styles) glabrous within, merely recoiling at maturity; leaves in ours palmately veined and lobed. 1. Geranium.
Carpels spindle-shaped, their tails (styles) pubescent within, spirally coiled at maturity; leaf-blades in ours pinnately veined, pinnately lobed or dissected. 2. Erodium.

1. **GERÀNIUM** (Tourn.) L. Cranebill, Wild Geranium.

Petals 2–7 mm. long, at most slightly exceeding the calyx; plants annual or biennial, or sometimes perennial in *G. thermale.*
Sepals not bristle-tipped; seeds smooth.
Carpels wrinkled; stamens 10. 1. *G. molle.*
Carpels finely pubescent; stamens 5. 2. *G. pusillum.*
Sepals awn-tipped; seeds reticulate or pitted.
Awn-tips less than 1 mm. long.
Seeds reticulate; pedicels slightly hirsute, not glandular. 3. *G. thermale.*
Seeds pitted; pedicels glandular-pubescent. 4. *G. rotundifolium.*
Awn-tips 1–2 mm. long.
Beak and branches of the style less than 3 mm. long. 5. *G. carolinianum.*
Beak and branches of the style more than 4 mm. long; inflorescence open. 6. *G. Bicknellii.*
Petals 1–3 cm. long; plants perennial, with rootstocks or caudices; seed reticulate.
Petals white; style-column and carpels glandular.
Leaf-blades thin, sparingly hirsute beneath; upper petioles retrorsely hirsute or glabrous; sepals slightly if at all glandular. 7. *G. Richardsonii.*
Leaf-blades thick, strigillose beneath; upper petioles canescent; sepals densely glandular-pubescent.
Leaf-blades with long lanceolate lobes; veins of the petals very strong. 8. *G. nervosum.*
Leaf-blades with short ovate lobes; veins of the petals rather weak. 17. *G. Cowenii.*
Petals purple or rose.
Plants with simple rootstocks or caudices; stem erect and simple below; style-column glandular-pubescent.
Stem and petioles glandular-viscid; petals strongly veined. 9. *G. viscosissimum.*
Stem and petioles retrorsely hairy, not glandular-viscid.
Petioles of the upper leaves minutely puberulent; petals strongly veined. 10. *G. strigosum.*
Petioles of the upper leaves with long hairs; petals faintly veined.
Stem nearly glabrous, sparingly hirsute; leaves short-strigose; inflorescence open. 11. *G. incisum.*
Stem and leaves densely hairy; inflorescence congested. 12. *G. canum.*
Plants with cespitosely branched caudices; stems usually diffusely branched.
Petals obcordate to broadly obovate, light purple, with darker veins.
Stem glandular-villous with long spreading hairs.
Divisions of the leaves much longer than broad, with ovate or lanceolate, acute teeth. 13. *G. Parryi.*
Divisions of the leaves about as broad as long, with broadly ovate, abruptly short-acuminate teeth. 14. *G. Pattersonii.*
Stem, petioles, and calyx with short grayish pubescence.
Pedicels and style-column densely glandular-pubescent.
Leaves with broadly ovate teeth; petals distinctly emarginate. 15. *G. Fremontii.*
Leaves with lanceolate or lance-ovate teeth; petals scarcely emarginate. 16. *G. caespitosum.*

Pedicels not glandular-pubescent; style-column rarely so.
Basal leaves 4–6 cm. broad; middle division broadly spatulate, 3-lobed; lobes notched; sepals over 1 cm. long. 17. *G. Cowenii.*
Basal leaves 2–3 cm. broad; middle division cuneate, 3-toothed at the apex; sepals less than 1 cm. long. 18. *G. marginale.*
Petals narrowly obovate or oblong, dark purple. 19. *G. atropurpureum.*

2. ERÒDIUM L'Her. STORKBILL, ALFILARIA, PIN CLOVER, FILAREE.
1. *E. cicutarium.*

FAMILY 67. OXALIDACEAE. WOOD-SORREL FAMILY.

Acaulescent herbs, with bulb-like rootstocks; petals violet or purple. 1. IONOXALIS.
Caulescent plants, with slender horizontal rootstocks or with an annual taproot; petals yellow. 2. XANTHOXALIS.

1. IONÓXALIS Small. VIOLET WOOD-SORREL. 1. *I. violacea.*

2. XANTHÓXALIS Small. YELLOW WOOD-SORREL.
Stem appressed-pubescent; capsule pubescent. 1. *X. stricta.*
Stem loosely pubescent, or nearly glabrous; capsule glabrous. 2. *X. Bushii.*

FAMILY 68. LINACEAE. FLAX FAMILY.

Stigmas introrse and more or less elongate; sepals glandless; flowers in ours blue, rarely white. 1. LINUM.
Stigmas terminal and capitate; sepals, at least the inner ones, with marginal glands; flowers in ours yellow. 2. CATHARTOLINUM.

1. LÌNUM L. FLAX, BLUE FLAX.
Inner sepals ciliate; stigmas much elongate; introduced annual. 1. *L. usitatissimum.*
Sepals not ciliate; stigmas rather short; native perennials.
Sepals over 5 mm. long at maturity, more than one-half as long as the capsule. 2. *L. Lewisii.*
Sepals less than 5 mm. long, less than one-half as long as the capsule. 3. *L. pratense.*

2. CATHARTOLÌNUM Reichenb. YELLOW FLAX.
Styles distinct; capsules without cartilaginous thickenings at the bases of the sepals; sepals ovate, scarcely as long as the capsule; leaves oblong or oblong-linear; flowers in fastigiate cymes.
Outer sepals obtuse or merely acutish at maturity; capsule 3 mm. long. 1. *C. sedoides.*
Outer sepals acuminate at maturity; capsule 4 mm. long. 2. *C. Kingii.*
Styles more or less united; capsule with cartilaginous thickenings at the base of the sepals; sepals lanceolate, much exceeding the capsule; leaves linear-lanceolate to subulate.
Outer sepals copiously gland-toothed; staminodia none or entire.
Stem, branches, and pedicels densely puberulent. 3. *C. puberulum.*
Stem, branches, and pedicels not densely puberulent, usually glabrous.
Sepals not more than half longer than the capsule, the inner ones with relatively coarse and conspicuously gland-tipped teeth.
Petals 5–9 mm. long.
Outer sepals with lateral ribs faint near the base; branches blunt-angled. 4. *C. australe.*
Outer sepals with lateral ribs prominent throughout; branches wing-angled. 5. *C. compactum.*
Petals 10–20 mm. long.
False septa of the capsule slightly thickened; sepals becoming 6–8 mm. long; petals 11–15 mm. long. 6. *C. rigidum.*
False septa thickened half their width; sepals becoming 9–11 mm. long; petals 17–20 mm. long. 7. *C. Berlandieri.*
Sepals twice as long as the capsule, long-acuminate, aristate, the inner ones with very numerous, fine, inconspicuously gland-tipped teeth. 8. *C. aristatum.*
Outer sepals entire or with few scattered teeth; staminodia 2-lobed. 9. *C. subteres.*

FAMILY 69. BALSAMINACEAE. JEWEL-WEED FAMILY.

1. IMPÀTIENS L. TOUCH-ME-NOT, JEWEL-WEED.
Spur present.
Spur porrect, *i. e.*, bent at a right angle to the sack, one-fourth as long as the same or less; sack as broad as long, pale yellow, unspotted or minutely so. 1. *I. pallida.*
Spur strongly incurved, one-third as long as the sack or more; sack longer than broad.
Sack at least two-thirds as broad as long, abruptly contracted into the spur; flowers orange or pinkish, with large spots or rarely unspotted. 2. *I. biflora.*

Sack one-half as broad as long or less, gradually tapering into the spur; flowers unspotted.
Sack about 2 cm. long; flowers light yellow. 3. *I. occidentalis.*
Sack about 12 mm. long; flowers golden-yellow. 4. *I. aurella.*
Spur wanting. 5. *I. ecalcarata.*

Family 70. **LIMNANTHACEAE.** False Mermaid Family.

1. FLOÈRKEA Willd. False Mermaid. 1. *F. occidentalis.*

Family 71. **ZYGOPHYLLACEAE.** Caltrop Family.

Leaves digitately 1–7-foliolate; stipules spiny; stamens with scale-like appendages. 1. Fagonia.
Leaves abruptly pinnate; stipules in ours not spiny.
Shrubs with endosperm; fruit woolly; stamens with scale-like appendages. 2. Covillea.
Herbs without endosperm; corolla mostly yellow; stamens without scale-like appendages.
Fruit dividing into 5 (by abortion sometimes fewer) carpels, each with 3–5 one-seeded compartments, spiny. 3. Tribulus.
Fruit dividing into 8–12 (twice as many as the original carpels) one-seeded nutlets, merely tubercled. 4. Kallstroemia.

1. FAGÒNIA L. 1. *F. californica.*

2. COVÍLLEA Vail. Creosote Bush, Hediondilla. 1. *C. glutinosa.*

3. TRÍBULUS L. Bur-nut. 1. *T. terrestris.*

4. KALLSTROÈMIA Scop. Caltrop.

Plant sparingly pubescent or glabrate; petals 3–5 mm. long; beak much shorter than the body of the fruit. 1. *K. brachystylis.*
Plant densely hirsute; petals 5–6 mm. long; beak slightly shorter than the body. 2. *K. hirsutissima.*

Family 72. **RUTACEAE.** Rue Family.

Fruit a samara; cells of ovary 2-ovuled; trees or shrubs with digitately compound leaves. 1. Ptelea.
Fruit a capsule; cells of ovary 5- or 6-ovuled; undershrubs or low shrubs with simple leaves. 2. Thamnosma.

1. PTÈLEA L. Hop-tree, Shrubby Trefoil. 1. *P. Baldwinii.*

2. THAMNÓSMA Torr. & Frem.

Shrubby; corolla 8–10 mm. long; capsule distinctly stipitate. 1. *T. montana.*
Herbaceous from a woody base; corolla about 4 mm. long; capsule sessile or subsessile. 2. *T. texana.*

Family 73. **POLYGALACEAE.** Milkwort Family.

1. POLÝGALA (Tourn.) L. Milkwort.

Plants herbaceous, unarmed; keel with a fimbriate crest.
Annuals; leaves verticillate, narrowly linear. 1. *P. verticillata.*
Perennials; leaves alternate.
Leaves linear or linear-oblanceolate. 2. *P. alba.*
Leaves lanceolate to ovate. 3. *P. Senega.*
More or less spiny undershrubs; keel not crested, but with a beak.
Plant 5–15 cm. high; flowers 7–10 mm. long. 4. *P. subspinosa.*
Plant 3–10 dm. high; flowers 3–4 mm. long. 5. *P. acanthoclada.*

Family 74. **EUPHORBIACEAE.** Spurge Family.

Flowers not in involucres; calyx of several sepals.
Corolla present in either the staminate or pistillate flowers, or in both.
Stamens 5 or 6; filaments distinct. 1. Croton.
Stamens 10; filaments monadelphous. 2. Ditaxis.
Corolla wanting. 3. Tragia.
Flowers in involucres; calyx represented by a minute scale on the filament-like pedicels.
Glands of the involucres with petal-like appendages, these however sometimes much reduced.
Leaves all opposite.
Leaf-blades oblique at the base, inequilateral; glands 4. 4. Chamaesyce.
Leaf-blades equilateral, not oblique at the base; glands 5. 5. Zygophyllidium.

Leaves alternate or scattered, at least below the inflorescence; annuals or biennials; bracts petal-like. 6. LEPADENIA.
Glands of the involucres without petal-like appendages, entirely naked, sometimes with crescent-shaped horns.
Stem topped by an umbel; stipules none; involucres in open cymes, each with 4 glands and entire or toothed lobes. 7. TITHYMALUS.
Stem not topped by an umbel; stipules gland-like; involucres in conglomerate cymes, each with a single gland, or rarely 4 glands and fimbriate lobes. 8. POINSETTIA.

1. CRÒTON L. CROTON.

Annual; leaf-blades linear, lanceolate, or oblong, 3–5 times as long as the petioles. 1. *C. texensis.*
Perennial; leaf-blades elliptic or oval, only a little longer than the petioles. 2. *C. longipes.*

2. DITÁXIS Vahl. 1. *D. humilis.*

3. TRÀGIA (Plum.) L. 1. *T. ramosa.*

4. CHAMAESÝCE S. F. Gray. SPURGE, CARPET-WEED.

Leaf-blades entire.
Annuals or biennials.
Plants prostrate; leaves oblong to orbicular.
Leaf-blades manifestly longer than broad, usually more than twice as long. 1. *C. Geyeri.*
Leaf-blades as broad as long or nearly so. 2. *C. serpens.*
Plants more or less ascending or erect; leaf-blades linear or linear-lanceolate.
Capsule less than 1.5 mm. long. 3. *C. revoluta.*
Capsule about 2 mm. long or more.
Appendages of the glands conspicuous, white. 4. *C. petaloidea.*
Appendages inconspicuous, greenish white, or obsolete.
Stems low and erect; stipules subulate-setaceous; seeds finely granulate, obscurely angled. 5. *C. Parryi.*
Stems long and ascending; stipules triangular; seeds smooth, 3-angled. 6. *C. flagelliformis.*
Perennials.
Leaves glabrous.
Appendages fan-shaped, white, petaloid; stipules triangular, fimbriate. 7. *C. albomarginata.*
Appendages crescent-shaped or semi-orbicular, greenish, pinkish, or yellowish; stipules subulate-setaceous.
Appendages crescent-shaped, much narrower than the gland; leaves broadly deltoid-ovate; seeds transversely ridged; plant prostrate. 8. *C. Greenei.*
Appendages conspicuous, semi-orbicular, fully as broad as the glands; leaves ovate or ovate-lanceolate; seeds irregularly pitted; plant erect. 9. *C. Fendleri.*
Leaves pubescent. 10. *C. lata.*
Leaves toothed, but sometimes only at the apex; stems and branches prostrate; annuals.
Capsules glabrous.
Seeds strongly transversely wrinkled. 11. *C. glyptosperma.*
Seeds pitted or irregularly and faintly wrinkled.
Seeds deeply and irregularly pitted. 12. *C. rugulosa.*
Seeds faintly pitted or wrinkled.
Leaves oblong; seeds usually with a white bloom. 13. *C. serpyllifolia.*
Leaves linear; seeds brownish, usually without a bloom. 14. *C. albicaulis.*
Capsule pubescent.
Leaf-blades and involucres glabrous or sparingly pubescent. 15. *C. maculata.*
Leaf-blades and involucres copiously hirsute. 16. *C. stictospora.*

5. ZYGOPHYLLÍDIUM Small. SPURGE.

Leaves entire; appendages of the glands triangular-ovate. 1. *Z. hexagonum.*
Leaves serrate; appendages of the glands semi-orbicular. 2. *Z. exstipulatum.*

6. LEPADÈNIA Raf. SNOW-ON-THE-MOUNTAIN. 1. *L. marginata.*

7. TITHÝMALUS (Tourn.) Adans. SPURGE.

Leaves entire; glands of the involucres with processes, except in the first species.
Perennials with a woody base; processes short and blunt, or none.
Stem-leaves linear; capsule rough; seeds smooth. 1. *T. Cyparissias.*
Stem-leaves from oblong or oblanceolate to orbicular; capsule smooth or slightly wrinkled; seeds pitted.
Glands crenulate, obscurely horned; leaves small, ascending. 2. *T. luridus.*
Glands distinctly horned; horns larger than the teeth (if any) between them; leaves large, spreading.
Bracts rhombic-ovate, cuspidate; stem rather slender. 3. *T. philorus.*
Bracts rhombic-reniform, mucronate; stem stout. 4. *T. robustus.*

Annuals or perennials by means of sobols (suckers); processes of the glands long and horn-like.
Seeds with small deep pits; leaves very thin. 5. *T. commutatus.*
Seeds with broad shallow pits; leaves firm. 6. *T. mancus.*
Leaves distinctly serrulate; plants annual or biennial; glands without processes.
Upper stem-leaves merely sessile; bracts manifestly longer than broad. 7. *T. arkansanus.*
Upper stem-leaves with small auricles at the base; bracts mostly broader than long. 8. *T. missouriensis.*

8. POINSÉTTIA Graham. Spurge.

Gland or glands of the involucre stalked; bracts and upper leaves slightly if at all discolored.
Seeds not prominently tubercled; glands of the involucre 3–4; leaf-blades linear or linear-lanceolate. 1. *P. cuphusperma.*
Seeds prominently tubercled; gland of the involucre solitary; leaf-blades ovate to lanceolate (linear-lanceolate only in one variety). 2. *P. dentata.*
Gland of the involucre sessile or nearly so; bracts and upper leaves discolored at the base; leaf-blades very variable, the upper usually fiddle-shaped. 3. *P. heterophylla.*

Family 75. **CALLITRICHACEAE.** Water Starwort Family.

1. CALLÍTRICHE L. Water Starwort.

Characters of the family.

Upper floating leaves obovate or spatulate, 3-nerved; flowers subtended by a pair of bracts. 1. *C. palustris.*
All leaves linear, 1-nerved; flowers bractless. 2. *C. autumnalis.*

Family 76. **CELASTRACEAE.** Staff-tree Family.

Stamens as many as the petals and sepals.
Fruit a loculicidal capsule; seeds with an aril.
Shrubby vines, with alternate leaves; ovary free from the disk; aril crimson. 1. Celastrus.
Shrubs, with opposite leaves; ovary immersed in the disk.
Capsule 3–5-celled, 3–5-lobed; aril orange or scarlet. 2. Euonymus.
Capsule 2-celled, unlobed; aril white or nearly so. 3. Pachystima.
Fruit indehiscent, by abortion 1-seeded; aril wanting. 4. Mortonia.
Stamens more numerous than the sepals or petals; ovary 1-celled. 5. Forsellesia

1. CELÁSTRUS L. Waxwork, Shrubby Bittersweet, Staff-tree. 1. *C. scandens.*

2. EUÓNYMUS (Tourn.) L. Burning Bush, Wahoo. 1. *E. atropurpureus.*

3. PACHÝSTIMA Raf. Mountain Lover.

Leaves decussately spreading; petioles abruptly contracted into the midrib; petals nearly as broad as long; stigma rounded. 1. *P. Myrsinites.*
Leaves arranged in one plane; petioles thickened, the thickening continued into the midrib; stigma 2-lobed.
Stigma slightly 2-lobed; anthers equalling the filaments. 2. *P. macrophylla.*
Stigmas deeply 2-cleft; anthers much shorter than the filaments. 3. *P. Schaefferi.*

4. MORTÒNIA A. Gray. 1. *M. utahensis.*

5. FORSELLÈSIA Greene.

Stamens 5–7. 1. *F. meionandra.*
Stamens 10. 2. *F. spinescens.*

Family 77. **ANACHARDIACEAE.** Sumach Family.

Drupe with pubescent exocarp; stone smooth. 1. Rhus.
Drupe with glabrous, smooth exocarp; stone ribbed. 2. Toxicodendron.

1. RHÚS (Tourn.) L. Sumach, Skunk-bush.

Leaflets 11–21; inflorescence terminating leafy shoots.
Leaflets light green or yellowish green, rather dull, subsessile. 1. *R. cismontana.*
Leaflets dark green above, shining, strictly sessile. 2. *R. occidentalis.*
Leaflets 1–3, rarely 5; inflorescence axillary.
Leaves densely villous. 3. *R. Osterhoutii.*
Leaves puberulent or glabrous.
Leaves 3-foliolate, rarely 5-foliolate.
Branchlets and leaves puberulent, at least when young. 4. *R. trilobata.*
Branchlets and leaves glabrous, except a few scattered cilia on the petioles and veins. 5. *R. oxyacanthoides.*

Leaves 1-foliolate, or rarely some of them 3-foliolate with small lateral leaflets and a broad terminal one. 6. *R. utahensis.*

2. TOXICODÉNDRON (Tourn.) Mill. Poison Ivy, Poison Oak, Poison Sumach.

Leaflets thick, the terminal one decidedly longer than broad, its petiolule usually 1–2 cm. long; petals 3 mm. long. 1. *T. Rydbergii.*
Leaflets thin, the terminal one nearly as broad as long, its petiolule 3–4 cm. long; petals 2.5 mm. long. 2. *T. longipes.*

Family 78. **ACERACEAE.** Maple Family.

Leaves palmately lobed or rarely palmatedly compound; flowers polygamous or perfect. 1. Acer.
Leaves pinnately compound; flowers dioecious. 2. Negundo.

1. ÀCER (Tourn.) L. Maple.

Flowers in racemes or corymbs; petals and sepals both present; disk well developed; lobes of the leaves toothed.
Flowers in long racemes, appearing after the leaves; leaves long-acuminate, with small lateral lobes; petals longer than the sepals. 1. *A. spicatum.*
Flowers corymbose, appearing with the leaves; leaves not long-acuminate, deeply 3–5-cleft; terminal lobe only slightly larger; petals and sepals greenish, subequal.
Bark of the one-year-old branches grayish; leaves and their lobes acuminate, not dotted beneath.
Sinuses between the leaf-lobes shallow, open; terminal lobe broadly triangular-ovate. 2. *A. Douglasii.*
Sinuses between the leaf-lobes deep and narrow; terminal lobe rhombic. 3. *A. glabrum.*
Bark of the one-year-old branches white; leaves and their lobes acute, not acuminate, with more or less numerous glandular red dots beneath. 4. *A. tripartitum.*
Flowers in umbels, appearing with the leaves; petals lacking; lobes of the leaves sinuate. 5. *A. grandidentatum.*

2. NEGÚNDO (Ray) Ludwig. Box-elder, Ash-leaved Maple.

Branchlets glabrous, usually with a bloom; anthers acute, tapering into a tip one-half to one-fourth mm. long. 1. *N. Nuttallii.*
Branchlets pubescent; anthers obtuse, merely mucronate.
Wings of the carpels terminal, scarcely at all decurrent on the body; racemes seldom over 1 dm. long in fruit. 2. *N. interius.*
Wings of the carpels extending down on the inner side almost to the bottom of the sinus; racemes in fruit 1.5–2 dm. long. 3. *N. Kingii.*

Family 79. **RHAMNACEAE.** Buckthorn Family.

Fruit pulpy; petals small, clawless, or wanting; stigmas usually 2. 1. Rhamnus.
Fruit dry; petals hooded and long-clawed; stigmas 3. 2. Ceanothus

1. RHÁMNUS (Tourn.) L. Buckthorn.

Flowers solitary or in sessile umbels, usually polygamo-dioecious or dioecious; winter-buds scaly.
Shrub spinose; introduced species. 1. *R. carthartica.*
Shrub not spinose; native species.
Flowers 4-merous; petals present; seeds 2, grooved; leaves not strongly veiny.
Leaves broadly lanceolate, acuminate with a blunt apex. 2. *R. lanceolata.*
Leaves narrowly lanceolate, not acuminate. 3. *R. Smithii.*
Flowers 5-merous, apetalous; seeds 3, scarcely grooved; leaves strongly veiny. 4. *R. alnifolia.*
Flowers in peduncled umbels or corymbs, perfect; winter-buds not scaly, pubescent.
Peduncles longer than the pedicels; leaves merely callous-denticulate. 5. *R. Purshiana.*
Peduncles shorter than the pedicels, sometimes almost none; leaves finely but distinctly serrate. 6. *R. betulaefolia.*

2. CEANÒTHUS L. New Jersey Tea, Mountain Laurel, Snow Brush, Deer Brush.

Leaves alternate, thin, triple-nerved.
Leaf-blades rounded-oval, often cordate at the base, closely glandular-dentate or crenate.
Peduncles often naked from lateral buds; leaves sparingly pubescent beneath, soon glabrate.
Leaves 3–6 cm. long; young branches long-hairy, soon glabrate. 1. *C. sanguineus.*
Leaves 1–2.5 cm. long; young branches finely puberulent. 2. *C. Martini.*
Peduncles on leafy branches of the present season; leaves velutinous beneath. 3. *C. velutinus.*

Leaf-blades oblong to elliptic or ovate, glandular-serrate to subentire.
Umbels panicled, mostly terminal; leaves dull beneath, glabrate or villous.
Leaves thin, glossy above, sparingly hairy when young, glabrate in age; peduncles finely viscid-puberulent. 4. *C. ovatus.*
Leaves thick, veiny, dull, as well as the peduncles more or less permanently villous. 5. *C. pubescens.*
Umbels mostly axillary; leaves silky beneath.
Leaf-blades distinctly glandular-serrate; plant not spiny. 6. *C. subsericeus.*
Leaf-blades obsoletely denticulate or entire; branches often ending in spines. 7. *C. Fendleri.*
Leaves opposite, very small and thick, not triple-nerved.
Leaves entire or nearly so; petals white. 8. *C. Greggii.*
Leaves spinulose-toothed; petals bluish. 9. *C. prostratus.*

Family 80. **VITACEAE.** Grape Family.

Hypogynous disk present; leaves in our species simple, palmately veined and usually lobed. 1. Vitis.
Hypogynous disk wanting; leaves palmately 5–7-foliolate. 2. Parthenocissus.

1. **VÌTIS** (Tourn.) L. Grape.

Twigs and leaves somewhat puberulent when young, glabrate in age, except the veins and their axils beneath; vine high-climbing. 1. *V. vulpina.*
Twigs and leaves white-floccose when young; plant scarcely climbing. 2. *V. arizonica.*

2. **PARTHENOCÍSSUS** Planch. Virginia Creeper, American Ivy, Woodbine.

Aerial rootlets present; tendrils with disks. 1. *P. quinquefolia.*
Aerial rootlets lacking; tendrils without disks. 2. *P. vitacea.*

Family 81. **MALVACEAE.** Mallow Family.

Style-branches filiform, stigmatose longitudinally on the exterior side.
Stamens simply monadelphous; flowers involucelled.
Petals notched at the apex; carpels beakless, without internal processes. 1. Malva.
Petals not emarginate at the apex; carpels beaked, with an internal process above the seed. 2. Callirrhoe.
Stamens more or less united in falanges in a double series; flowers without involucels. 3. Sidalcea.
Style-branches terminated by capitate stigmas.
Lower seed at least from an ascending ovule; calyx more or less bracteolate.
Carpels strongly reticulate on the lower part of the sides facing the adjacent carpels, this portion enclosing the seeds, the upper part of the carpels smooth and empty. 4. Sphaeralcea.
Carpels not differentiated in an upper and lower portion.
Carpels thin-walled, loosely investing the 2 or 3 seeds, hirsute; tall perennials with maple-like leaves. 5. Phymosia.
Carpels reticulate, the rather thick walls closely surrounding the single seed; annuals with round-lobed leaves. 6. Eremalche.
Lower seed at least resupinate-pendulous; calyx without involucels or these represented by 1–3 setaceous bractlets.
Carpels 1-ovuled, the cell filled with the seed; bractlets present. 7. Disella.
Carpels 3–9-ovuled, several-seeded, dehiscent apically and dorsally; bractlets absent. 8. Abutilon.

1. **MÁLVA** (Tourn.) L. Mallow, Cheeses (fruit).

Corolla scarcely exceeding the calyx; carpels rugose-reticulate on the back, and with acute or winged margins.
Calyx becoming much enlarged, and spreading under the fruit, nervose-reticulate; angles of the carpels margined and denticulate. 1. *M. parviflora.*
Calyx not much enlarged in fruit, mostly erect, not reticulate; carpels merely acute on the margins. 2. *M. pusilla.*
Corolla about twice as long as the calyx; carpels not rugose on the backs, round-margined.
Plant decumbent; leaves scarcely crisp; carpels smooth. 3. *M. rotundifolia.*
Plant erect; leaves very crisp; carpels veiny-reticulate. 4. *M. crispa.*

2. **CALLÍRRHOË** Nutt. Poppy Mallow. 1. *C. involucrata.*

3. **SIDÁLCEA** A. Gray. Wild Hollyhock, False Mallow, Rose Mallow.

Corolla yellowish white; plant with a creeping rootstock; leaves glabrous. 1. *S. candida.*
Corolla pink, rose-colored, or lilac, rarely white; plants with a woody base; leaves pubescent.

Pubescence, especially that of the calyx and stem, stellate, without any longer hairs.
Petals about 10 mm. long; carpels smooth. 2. *S. oregana.*
Petals 15–20 mm. long; carpels reticulate on the back. 3. *S. nervata.*
Pubescence of the calyx and the stem at least with some scattered long hairs.
Calyx-lobes lanceolate; stem mostly single, erect.
Calyx stellate, with longer hairs on the margins; carpels puberulent, reticulate on the back. 4. *S. campestris.*
Calyx hirsute, with branched hairs; carpels smooth and glabrous. 5. *S. neomexicana.*
Calyx-lobes ovate, glandular-puberulent and with a few scattered long hairs; stems usually several, decumbent at the base. 6. *S. crenulata.*

4. SPHAERÁLCEA St. Hil. Globe Mallow, Scarlet Mallow.

Leaves lanceolate; fruit ellipsoid to ovate.
Carpels with a cusp. 1. *S. cuspidata.*
Carpels rounded at the apex. 2. *S. angustifolia.*
Leaves rounded or rhomboid to reniform in outline; fruit depressed-globose to broadly ellipsoid.
Leaves merely toothed or round-lobed, or at most cleft half-way down.
Plant low and depressed, 1 or rarely 2 dm. high; leaf-blades rounded-rhombic, coarsely toothed. 3. *S. caespitosa.*
Plant tall, 3–6 dm. high; leaf-blades round-lobed.
Calyx-lobes 5–7 mm. long, acuminate, longer than the fruit; inflorescence more racemiform. 4. *S. ambigua.*
Calyx-lobes 3–4 mm. long, merely acute, not longer than the fruit; inflorescence thyrsoid.
Leaves lobed less than half-way down.
Capsule separating from the axis by means of a thread; leaves coarsely few-toothed; terminal lobe mostly acute. 5. *S. Munroana.*
Carpels without a thread; leaves densely crenate; terminal lobe rounded.
Calyx sparingly stellate, except at the base and on the margins of the lobes. 6. *S. marginata.*
Calyx densely stellate throughout. 7. *S. arizonica.*
Leaves 3-cleft half-way down, the terminal lobe acute. 8. *S. subrhomboidea.*
Leaf-blades divided to near the base.
Upper seedless portion of the carpels at least as large as the lower reticulate and seed-enclosing portion.
Plant green, only slightly stellate; bractlets about two-thirds as long as the calyx; fruit ellipsoid. 9. *S. Rusbyi.*
Plant grayish or whitish, densely stellate; bractlets scarcely half as long as the calyx; fruit depressed-globose.
Primary divisions of the leaves cuneate, with rounded-ovate lobes; corolla about 12 mm. long. 10. *S. grossulariaefolia.*
Primary divisions of at least the upper leaves with linear divisions; corolla 9–10 mm. long. 11. *S. digitata.*
Upper smooth seedless portion of the carpels very small, much smaller than the lower reticulate portion.
Primary divisions of the leaves rather broad, cleft or lobed.
Leaves 3-parted; lateral segments deeply 2-cleft; lobes broadly oblong, oblanceolate, or obovate.
Plant low, 1–2 dm. high; middle segment of the leaves slightly longer than the others; raceme crowded. 12. *S. coccinea.*
Plant tall, 3–4 dm. high; middle segment of the leaves usually half longer than the others; raceme elongate. 13. *S. elata.*
Leaves 5-parted to the base; segments all cleft into linear or linear-oblong lobes. 14. *S. dissecta.*
Primary divisions of the leaves linear, not lobed. 15. *S. leptophylla.*

5. PHYMÒSIA Desv. Wild Hollyhock, Maple-leaved Mallow.

Sepals lanceolate or ovate-lanceolate, long-attenuate; bractlets subulate, three-fourths as long as the sepals. 1. *P. Crandallii.*
Sepals broadly triangular-ovate, acute; bractlets scarcely more than half as long as the sepals.
Calyx and pedicels stellate; bractlets subulate; petals 2–2.5 cm. long.
Plant sparingly stellate, green. 2. *P. rivularis.*
Plant densely stellate-canescent. 3. *P. acerifolia.*
Calyx and pedicels hirsute with branched hairs; bractlets lanceolate; petals 3 cm. or more long. 4. *P. grandiflora.*

6. EREMÁLCHE Greene. 1. *E. exilis.*

7. DISÉLLA Greene.

Leaves reniform or orbicular. 1. *D. hederacea.*
Leaves lanceolate, hastate. 2. *D. sagittaefolia.*

8. ABÙTILON (Tourn.) Mill. Indian Mallow, Velvet Leaf.

1. *A. parvulum.*

Family 82. **HYPERICACEAE.** St. John's-wort Family.

1. **HYPÉRICUM** (Tourn.) L. St. John's-wort.

Petals more than twice as long as the sepals, both usually margined with black glands; stamens numerous; erect perennials.
- Sepals acuminate or at least decidedly acute. 1. *H. formosum.*
- Sepals obtuse or acutish.
  - Stem 3–5 dm. high; petals 8–10 mm. long. 2. *H. Scouleri.*
  - Stem about 1 dm. high; petals 10–15 mm. long. 3. *H. Nortonae.*

Petals slightly exceeding the sepals; black glands none; stamens 5–20; annuals or no. 4 often perennial, rooting at the nodes.
- Procumbent, often forming mats; leaves broadly oval. 4. *H. anagalloides.*
- Erect and simple; leaves oblong to lanceolate. 5. *H. majus.*

Family 83. **ELATINACEAE.** Water-wort Family.

1. **ELATÌNE** L. Water-wort, Mud-purslane.

Flowers sessile; stamens 2–3, as many as the petals.
- Leaves oblanceolate; flowers usually 3-merous. 1. *E. triandra.*
- Leaves obovate.
  - Flowers 3-merous; plant red; leaves 2 mm. long. 2. *E. rubella.*
  - Flowers 2-merous; plant green; leaves 4–6 mm. long. 3. *E. americana.*

Flowers pedicelled; stamens 6–8, twice as many as the sepals and petals. 4. *E. Williamsii.*

Family 84. **FRANKENIACEAE.** Frankenia Family.

1. **FRANKÈNIA** L. 1. *F. Jamesii.*

Family 85. **CISTACEAE.** Rock-rose Family.

1. **CROCÁNTHEMUM** Spach. Frost-weed. 1. *C. majus.*

Family 86. **VIOLACEAE.** Violet Family.

Sepals auricled at the base; corolla spurred. 1. Viola.
Sepals not auricled at the base; lowest petal merely saccate at the base. 2. Calceolaria.

1. **VIOLA** (Tourn.) L. Violet, Hearts-ease, Pansy.

Plants acaulescent, or without manifest stems.
- Plants without stolons.
  - Flowers violet-purple.
    - Rootstock thick.
      - Leaves not lobed nor parted.
        - Leaves and scapes glabrous.
          - Spurred petal glabrous, rounded at the apex.
            - Peduncles of cleistogamous flowers usually 1–3 cm. long, prostrate under the soil or dead leaves. 1. *V. papilionacea.*
            - Peduncles of cleistogamous flowers usually 4–6 cm. long, erect or ascending. 2. *V. pratincola.*
          - Spurred petal more or less bearded, retuse or emarginate.
            - Spurred petal somewhat bearded, mostly retuse. 3. *V. retusa.*
            - Spurred petal thickly bearded, emarginate. 4. *V. nephrophylla.*
        - Leaves and scapes hirsutulous. 5. *V. septentrionalis.*
      - Leaves 2–3-ternately parted. 6. *V. pedatifida.*
    - Rootstock slender. 7. *V. Selkirkii.*
  - Flowers white. 8. *V. renifolia.*
- Plants stoloniferous.
  - Flowers not yellow.
    - Flowers white or lilac; petioles glabrous. 9. *V. palustris.*
    - Flowers white; petioles after flowering pilose. 10. *V. Macloskeyi.*
  - Flowers yellow.
    - Stolons several, long, prostrate, leafy. 11. *V. sempervirens.*
    - Stolons few, short, ascending, with 1–3 leafy bracts. 12. *V. orbiculata.*

Plants caulescent, or with manifest stems.
- Leaves compound or much dissected.
  - Upper petals deep violet, the lower pale violet, with yellow base. 13. *V. Beckwithii.*
  - All the petals pale yellow. 14. *V. Sheltonii.*
- Leaves simple, not dissected.
  - Flowers yellow.
    - First peduncles from the base of the stems.
      - Basal leaves round, 5–7-lobed or -toothed. 15. *V. venosa.*

Basal leaves ovate to lanceolate, denticulate.
Basal leaves 5–9 cm. long, ovate to elliptic. 16. *V. linguaefolia.*
Basal leaves 2–5 cm. long.
Basal leaves narrowly ovate, obtuse. 17. *V. vallicola.*
Basal leaves lanceolate, acute or subacute. 18. *V. Nuttallii.*
First peduncles from the upper half of the stem.
Style and lateral petals beardless. 19. *V. biflora.*
Style and lateral petals bearded.
Upper part of stem and its leaves nearly glabrous. 20. *V. glabella.*
Upper part of stem and its leaves densely short-pubescent. 21. *V. pubescens.*
Flowers not yellow.
Petals white on the inner face, with a yellow base, on the outer face usually purplish.
Underground stolons present. 22. *V. rugulosa.*
Stolons lacking.
Stems usually 15–35 cm. high. 23. *V. canadensis.*
Stems usually 10–15 cm. high. 24. *V. scopulorum.*
Petals violet or purple.
Stipules sharply or bristly toothed; perennials.
Plant dwarf; leaves cuneate, glabrous. 25. *V. bellidifolia.*
Plant over 1 dm. high, usually puberulent.
Leaves 2–3 cm. long, seeds 1.5 mm. long. 26. *V. adunca.*
Leaves 3–5 cm. long, seeds 2 mm. long. 27. *V. montanensis.*
Stipules leaf-like, pectinate at base; annuals. 28. *V. Rafinesquii.*

2. CALCEOLÀRIA Loefl. GREEN VIOLET. 1. *C. verticillata.*

FAMILY 87. LOASACEAE. LOASA FAMILY.

Stamens numerous; styles several, more or less distinct; seeds several or many.
Styles and placentae 3; flowers subsessile.
Placentae with horizontal lamellae between the seeds; these in two rows.
Filaments 3-cleft at the apex, the middle tooth bearing the anther, the lateral ones cuspidate; seeds angled or with folds, not winged; annuals. 1. BICUSPIDARIA.
Filaments not cleft; seeds very flat, more or less winged; perennials or biennials. 2. NUTTALLIA.
Placentae without lamellae; seeds usually prismatic.
Placentae filiform; ovules in one row, 10–40; seeds minutely muricate, not striate; filaments free or nearly so. 3. ACROLASIA.
Placentae broad, band-like; ovules in 1–2 rows, few; seeds distinctly striate, often rugose; filaments at the base united with the petals into a ring. 4. MENTZELIA.
Styles and placentae 5; flowers distinctly pedicelled. 5. EUCNIDE.
tamens 5; styles simple; seed solitary. 6. PETALONYX.

1. BICUSPIDÀRIA (S. Wats.) Rydb. 1. *B. tricuspis.*

2. NUTTÁLLIA Raf. SAND LILY, BLAZING STAR.

Petal-like staminodia present; petals therefore apparently 10 or nearly that number.
Petals golden or greenish yellow, rarely more than 2 cm. long.
Seeds irregularly angled on the faces; petals greenish yellow. 1. *N. lutea.*
Seeds not angled on the faces; petals golden yellow.
Upper leaves entire, narrowly linear. 2. *N. multicaulis.*
All leaves pinnatifid or lobed.
Petals obtuse; seeds broadly winged.
Lower leaves at least deeply pinnatifid, with linear-oblong or lanceolate lobes. 3. *N. multiflora.*
Leaves sinuately lobed or toothed, with triangular-ovate lobes or teeth.
Stem glabrous; all leaves oblanceolate; capsule somewhat turbinate at the base. 4. *N. lobata.*
Stem pubescent; upper leaves lanceolate,with broad clasping bases; capsule rounded at the base. 5. *N. pterosperma.*
Petals acute.
Capsule 7–10 mm. long; lobes of the leaves narrowly linear. 6. *N. humilis.*
Capsule over 12 mm. long; lobes of the leaves not narrowly linear.
Plants low, less than 4 dm. high; leaves less than 6 cm. long; petals less than 15 mm. long; seeds broadly winged.
Leaves sinuately dentate or crenate, the lower ones oblanceolate or spatulate, the upper ovate-lanceolate. 7. *N. integra.*
Leaves mostly pinnatifid.
Plant simple below; lobes of the leaves short, broadly oblong. 8. *N. pumila.*
Plant much branched and suffruticose at the base; lobes of the leaves narrow, linear or lanceolate. 9. *N. densa.*
Plants tall, usually 4 dm. high, or more; leaves often 1 dm. long; petals 15–20 mm. long; seed less broadly winged.

Leaves divided to near the midrib into linear-oblong or narrowly lanceolate lobes. 10. *N. laciniata.*
Leaves sinuate or lobed halfway to the midrib; lobes triangular or ovate.
Stem erect; leaves tapering at the base, lobed. 11. *N. speciosa.*
Stem decumbent at the base; leaves, at least the upper ones, rounded at the base, sinuate. 12. *N. crysantha.*
Petals straw-colored, usually more than 2 cm. long.
Outer filaments dilated; petals 2–3 cm. long.
Petals about 2 cm. long; upper leaves with broad bases, long-acuminate. 13. *N. Rusbyi.*
Petals nearly 3 cm. long; none of the leaves broad at the base.
Plant branched below; flowers subtended by solitary entire bracts. 14. *N. nuda.*
Plant simple below; flowers subtended by several toothed bracts. 15. *N. stricta.*
Filaments all filiform; petals 4–5 cm. long. 16. *N. decapetala.*
Petal-like staminodia none; petals 5, yellow; a few of the outer filaments slightly dilated.
Stem glabrous or nearly so, white and shining; upper stem-leaves neither with a broad base, nor long-acuminate. 17. *N. laevicaulis.*
Stem pubescent throughout, straw-colored, rather dull; upper stem-leaves long-acuminate and with a broad base.
Petals 5–7 cm. long; leaves coarsely hirsute-scabrous. 18. *N. acuminata.*
Petals 2.5–3 cm. long; leaves finely scabrous-puberulent. 19. *N. parviflora.*

3. **ACROLÀSIA** Presl.

Inflorescence congested; bracts broad, 3-lobed, membranous at the base. 1. *A. congesta.*
Inflorescence open; bracts neither 3-lobed nor membranous.
Seeds rather strongly muricate; upper leaves narrow; sepals lanceolate-subulate, half as long as the petals or longer.
Petals 3–6 mm. long.
Leaves pinnatifid with many lobes; petals 5–6 mm. long.
Leaves divided to near the midrib, with ascending lobes; plant erect. 2. *A. gracilis.*
Leaves divided one-half or one-third to the midrib, with divergent lobes; plant ascending or diffuse. 3. *A. ctenophora.*
Only the middle leaves pinnatifid with few lobes, or seldom all entire; petals 3–4 mm. long. 4. *A. albicaulis.*
Petals 2–3 mm. long; plant very slender.
Leaves deeply pinnatifid, with narrow lobes. 5. *A. Tweedyi.*
Leaves narrowly linear, entire. 6. *A. tenerrima.*
Seeds minutely muricate (tubercles seen only under strong magnification); at least the upper leaves broadly ovate.
Petals 5 mm. long; sepals about half as long, lanceolate, acute; plant tall and stout. 7. *A. latifolia.*
Petals 3–4 mm. long; sepals linear, obtuse, only one-third as long as the petals.
Plant tall, 3–5 dm. high; capsules 2–3 cm. long; lower leaves lanceolate or linear, some of them usually toothed. 8. *A. dispersa.*
Plant low, less than 2 dm. high; capsule 12–15 mm. long; leaves all ovate, entire. 9. *A. compacta.*

4. **MENTZÈLIA** (Plum.) L. Stick-leaf. 1. *M. oligosperma.*

5. **EUCNÌDE** Zucc. 1. *E. urens.*

6. **PETALÒNYX** A. Gray.

Leaves of the branches reduced, less than 1 cm. long. 1. *P. Thurberi.*
Leaves of the branches not reduced, about 2 cm. long. 2. *P. Parryi.*

Family 88. **CACTACEAE.** Cactus Family.

Leaves evident, but small and deciduous; flowers without definite tube; seeds with a bony aril; stems jointed. 1. Opuntia.
Leaves wanting; flowers with a more or less definite tube; seeds without aril; stems not conspicuously jointed.
Flowers borne near the spine-bearing areolae.
Plant-body more or less cylindric; spines arranged on definite ribs; flowers arising from near fully developed areolae, hence lateral on the stem. 2. Echinocereus.
Plant-body usually globular or ellipsoid or short cylindric; fruit not spiny; stem tubercled or ribbed, if ribbed the flowers arising near young areolae, hence nearly terminal on the stem.
Flowers large; fruit covered with bracts; seeds smooth. 3. Echinocactus.
Flowers small; fruit naked or nearly so; seeds roughened; stems tubercled. 4. Pediocactus.
Flowers borne remote from the spines, at the base of the tubercles of the stem. 5. Coryphantha.

1. **OPÚNTIA** Hill. Prickly Pear, Cholla, Indian Fig, Tree Cactus.

Internodes cylindrical; spines covered with a delicate sheath.
- Internodes very fleshy, turgid, easily detached. — 1. *O. echinocarpa.*
- Internodes less fleshy, not easily detached.
  - Fuit dry; seeds angular. — 2. *O. acanthocarpa.*
  - Fruit fleshy; seeds not angular.
    - Plants tall (1 to 3 meters high); flowers red. — 3. *O. arborescens.*
    - Plants low and spreading (less than 1 meter high).
      - Spines yellow; flowers olive-green. — 4. *O. Davisii.*
      - Spines white; flowers yellow. — 5. *O. Whipplei.*

Internodes flat and broad; spines not covered by a sheath.
- Pulvini not densely woolly.
  - Fruit dry when mature, usually very spiny.
    - Internodes very fleshy, often terete in section, the terminal one easily breaking loose. — 6. *O. fragilis.*
    - Internodes never terete in section, but always much broader than thick.
      - Internodes somewhat turgid; spines very long. — 7. *O. rutila.*
      - Internodes flat; spines medium length.
        - Petals normally yellow.
          - Spines stout, dark brownish. — 8. *O. polyacantha.*
          - Spines weak, white. — 9. *O. Schweriniana.*
        - Petals red.
          - Filaments red. — 10. *O. rhodantha.*
          - Filaments yellow. — 11. *O. xanthostemma.*
  - Fruit juicy, usually naked or nearly so.
    - Internodes pubescent, always spineless. — 12. *O. basilaris.*
    - Internodes glabrous.
      - Internodes often naked or sometimes bearing long, stout spines.
        - Internodes pale, somewhat glaucous. — 13. *O. humifusa.*
        - Internodes deep green. — 14. *O. Greenei.*
      - Internodes generally bearing several spines from each areole.
        - Spines twisted. — 15. *O. tortispina.*
        - Spines not evidently twisted.
          - Low and procumbent; internodes 5 to 10 cm. broad. — 16. *O. camanchica.*
          - Stout and somewhat ascending; internodes 12 cm. or more broad. — 17. *O. utahensis.*
- Pulvini densely long-woolly.
  - Plant erect; one spine deflexed. — 18. *O. Palmeri.*
  - Plant prostrate; all spines deflexed. — 19. *O. rubrifolia.*

2. **ECHINOCÈREUS** Engelm. Hedgehog Cereus.

Corolla greenish; ribs of the stem about 13. — 1. *E. viridiflorus.*

Corolla red or purple; ribs usually less than 13.
- Ribs of the stem 8–12.
  - Flowers scarlet; central spines 2–7.
    - Central spines all terete; flowers 4–6 cm. long, yellowish inside. — 2. *E. aggregatus.*
    - Lower central spine quadrangular; flowers 8–10 cm. long. — 3. *E. Roemeri.*
  - Flowers purple or violet.
    - Central spines 4–5, straight. — 4. *E. Engelmanni.*
    - Central spines solitary, bulbous at the base.
      - Central spine terete; radials 12–25 mm. long, the lower stouter. — 5. *E. Fendleri.*
      - Central spine angular; radials 2–5 cm. long, the lateral ones strongest. — 6. *E. mojavensis.*
- Ribs of the stem 5–7.
  - Central spine present, 8 cm. long, angled and grooved; radials 6–8, strongly angled. — 7. *E. goniacanthus.*
  - Central spine wanting; radials 3–59, almost terete. — 8. *E. pauci spinus.*

3. **ECHINOCÁCTUS** Link & Otto. Hedgehog Cactus, Barrel Cactus.

Stem with definite ridges, not tuberculate.
- Scales of the hypanthium subulate, copiously woolly in their axils; fruit dry and clothed with wool.
  - Uppermost central spine the broadest; ribs of the stem 15–20. — 1. *E. polycephalus.*
  - Lowermost central spine the broadest; ribs of the stem 13. — 2. *E. xeranthemoides.*
- Scales of the hypanthium ovate, orbicular, or cordate, not woolly in their axils; fruit not woolly.
  - One or more of the central spines strongly hooked, neither annulate nor strongly compressed.
    - Central spines except the hooked one, flattened, glabrous. — 3. *E. Whipplei.*
    - Central spines all terete, pubescent. — 4. *E. pubispinus.*
  - On or more of the central spines distinctly annular, strongly broadened, flattened above, slightly if at all hooked.
    - Radial spines 9–13; upper central spine angled. — 5. *E. cylindraceus.*
    - Radial spines over 20; upper three spines terete. — 6. *E. Wislizeni.*

Stem with the ribs more or less divided into tubercles.
Tubercles terete.
Radial spines 8–9; central ones 1–3; tubercles 1 cm. high. 7. *E. subglaucus.*
Radial spines 10–14; central spines 4; tubercles low. 8. *E. Johnsoni.*
Tubercles rhombic in cross-section; radial spines 13–15. 9. *E. Sileri.*

4. PEDIOCÁCTUS Britton & Rose. 1. *P. Simpsoni.*

5. CORYPHÁNTHA (Engelm.) Lem.

Larger spines curved upwards; tubercles not grooved; flowers borne at the base of older tubercles, hence lateral on the stem. 1. *C. Grahami.*
Spines all straight; tubercles grooved; flowers borne at the base of young tubercles, hence nearly terminal.
Flowers yellowish or greenish, merely tinged with red; central spines 1; berry scarlet, globose.
Stem usually simple or nearly so; central spines stout, porrect; flowers about 2.5 cm. long. 2. *C. missouriensis.*
Stems tufted; central spine often wanting or small; flowers 3–4 cm. long. 3. *C. similis.*
Flowers purple; central spines several; berry green, ellipsoid.
Stems tufted, depressed-globose; central spines 3–4. 4. *C. vivipara.*
Stems usually simple, ellipsoid or oblong; central spines 4–12, rarely 3. 5. *C. radiosa.*

Family 89. **ELAEAGNACEAE.** Oleaster Family.

Stamens 4; flowers perfect or polygamous; leaves alternate. 1. Elaeagnus.
Stamens 8; flowers dioecious; leaves opposite. 2. Lepargyrea.

1. ELAEÁGNUS (Tourn.) L. Silver-berry, Silver-bush. 1. *E. commutata.*

2. LEPARGYRÈA Raf. Buffalo-berry, Bull-berry.

Leaves green above; shrub not thorny. 1. *L. canadensis.*
Leaves silvery white on both sides; plant usually thorny.
Leaves oblong; fruit ellipsoid; tall shrub or small tree. 2. *L. argentea.*
Leaves rounded-oval or ovate; fruit globular; low shrub. 3. *L. rotundifolia.*

Family 90. **LYTHRACEAE.** Loosestrife Family.

Hypanthium campanulate or turbinate, in fruit becoming globose or hemispheric.
Capsule bursting irregularly. 1. Ammania.
Capsule septicidal. 2. Rotala.
Hypanthium cylindric. 3. Lythrum.

1. AMMÁNIA (Houston) L. 1. *A. coccinea.*

2. ROTÀLA L. 1. *R. ramosior.*

3. LÝTHRUM L. Loosestrife. 1. *L. alatum.*

Family 91. **ONAGRACEAE.** Evening-Primrose Family.

Flowers 4-merous.
Fruit a many-seeded capsule, opening by valves.
Seeds with a tuft of silky hairs.
Hypanthium not prolonged beyond the ovary; flowers large. 1. Chamaenerion.
Hypanthium somewhat prolonged beyond the ovary.
Hypanthium-tube cylindric, not inflated above the ovary, without scales within; flowers neither showy nor scarlet.
Flowers regular; stamens and style not declined; petals purplish, pink or white, in ours yellow only in one species. 2. Epilobium.
Flowers irregular; stamens and style somewhat declined; petals yellowish. 3. Cordylophorum.
Hypanthium-tube inflated above the ovary, bearing 8 scales within; flowers irregular, showy scarlet. 4. Zauschneria.
Seeds without a tuft of silky hairs, naked or tuberculate.
Hypanthium not produced beyond the ovary; flowers minute.
Stamens 8; sepals deciduous; capsule linear. 5. Gayophytum.
Stamens 4; sepals persistent; capsule obovoid or turbinate. 6. Isnardia.
Hypanthium prolonged beyond the ovary into a cylindric or funnelform tube.
Anthers attached near the base, erect; petals never yellow.
Calyx-lobes erect; petals minute, clawless; capsule membranous. 7. Boisduvallia.

Calyx-lobes reflexed; petals showy, clawed; capsule coriaceous.
Fertile stamens 4, the alternate ones rudimentary; petals 3-lobed. 8. CLARKIA.
Fertile stamens 8; petals entire, rhombic. 9. PHAEOSTOMA.
Anthers attached near the middle and versatile.
Stigma divided into 4 linear lobes.
Stamens equal in length; capsule terete or round-angled.
Ovules and seeds horizontal, inserted in 2 or rarely more rows, prismatic-angled; petals yellow. 10. OENOTHERA.
Ovules and seeds ascending, in one row, not angled; buds drooping; petals white or pink. 11. ANOGRA.
Stamens unequal in length, the alternate longer; capsule crested or winged; plant acaulescent or low-stemmed.
Capsules with more or less distinct double crests on the angles; seed furrowed along the raphe. 12. PACHYLOPHUS.
Capsules winged or at least sharply angled on the angles.
Plants acaulescent, cespitose. 13. LAVAUXIA.
Plants caulescent, with wiry diffuse stems. 14. GAURELLA.
Stigma discoid or capitate.
Stigma discoid; hypanthium-tube funnelform above.
Hypanthium-tube longer than the ovary; stigma entire. 15. GALPINSIA.
Hypanthium-tube shorter than the ovary; stigma 4-toothed. 16. MERIOLIX.
Stigma capitate.
Plant acaulescent; capsules 4-winged; hypanthium-tube tubular-cylindric. 17. TARAXIA.
Plant caulescent; capsules not winged; hypanthium-tube obconic or funnelform.
Capsule linear, sessile, narrowed above. 18. SPHAEROSTIGMA.
Capsule more or less clavate, pedicelled and obtuse. 19. CHYLISMIA.
Fruit indehiscent, nut-like.
Hypanthium-tube filiform; filaments unappendaged; ovary 1-celled. 20. STENOSIPHON.
Hypanthium-tube obconic; filaments with scales at the base; ovary 4-celled. 21. GAURA
Flowers 2-merous; fruit indehiscent, obovoid and bristly with hooked hairs. 22. CIRCAEA.

1. CHAMAENÈRION (Gesn.) Boehmer-Ludwig. FIRE-WEED.

Style pubescent at the base; leaves lanceolate or linear-lanceolate, with the lateral veins confluent in marginal loops.
Petals 15–20 mm. long; stem-leaves usually obtuse at the base. 1. *C. exaltatum.*
Petals 8–12 mm. (rarely 15 mm.) long; leaves all acute at the base. 2. *C. spicatum.*
Style glabrous; lateral veins of the leaves obsolete, not looped.
Leaves lanceolate to ovate, entire or nearly so; pod about 3 mm. thick. 3. *C. latifolium.*
Leaves narrowly linear-lanceolate, denticulate; pod about 2 mm. thick. 4. *C. subdentatum.*

2. EPILÒBIUM (Gesn.) L. WILLOW-HERB, COTTON-WEED.

Petals purple, pink or white.
Perennials; stigma entire or merely notched.
Leaves oblong, oval, ovate, or lanceolate, usually dentate or denticulate.
Plants with rosettes or turions; leaves ovate or lanceolate, usually broadest below the middle, and distinctly denticulate or dentate (except sometimes in nos. 8, 9, and 16).
Stem pubescent throughout; leaves also pubescent, at least when young.
Pubescence consisting of long silky hairs. 1. *E. ursinum.*
Pubescence short and dense, crisp or glandular.
Petals 7–8 mm. long. 2. *E. Sandbergii.*
Petals 4–5 mm. long.
Leaves ovate, permanently glandular, dark green. 3. *E. Palmeri.*
Leaves lanceolate, glabrous in age, pale green. 13. *E. stramineum.*
Stem glabrous below; leaves glabrous or nearly so.
Flowers 7–8 mm. long; petals purple or dark pink; leaves ovate-lanceolate.
Leaves sessile or nearly so; innovations by turions.
Seeds without apiculations; coma sessile.
Plant tall, 5–10 dm. high; leaves dark green, sharply dentate. 4. *E. glandulosum.*
Plant low, 2–4 dm. high; leaves light green, more indistinctly denticulate. 5. *E. ovatifolium.*
Seeds with a pale hyaline beak at the apex. 6. *E. brevistylum.*
Leaves short-petioled; innovations by rosettes. 7. *E. occidentale.*

Flowers 3–5 mm. long.
Leaves all except the uppermost, short-petioled.
Seeds pellucid-apiculate; leaves not very thin; pods strongly ascending or nearly erect.
Innovations by rosettes.
Leaves narrowly lanceolate, pale green; corolla white. 8. *E. americanum.*
Leaves broadly lanceolate, not pale; corolla usually pink. 9. *E. adenocaulon.*
Innovations by turions. 10. *E. latiusculum.*
Seeds not apiculate; leaves very thin; pods ascending-spreading. 11. *E. MacDougalii.*
Leaves all sessile or only the very earliest sometimes short-petioled.
Leaf-blades rounded at the base, broadly lanceolate to ovate.
Petals purple, 5–8 mm. long, leaf-blades usually ovate. 5. *E. ovatifolium.*
Petals white, 4 mm. long; leaf-blades lanceolate. 12. *E. rubescens.*
Leaf-blades acute at the base.
Petals white or rarely pale pink.
Leaf-blades ample, ovate or broadly lanceolate.
Plant tall, 3–6 dm. high; pod and inflorescence more or less glandular. 13. *E. stramineum.*
Plant 1–2 dm. high; whole plant perfectly glabrous, except the slightly crisp-hairy decurrent lines. 14. *E. saximontanum.*
Leaf-blades narrowly lanceolate, almost erect; plant slender, 1–3 dm. high. 15. *E. Drummondii.*
Petals pink-purple. 16. *E. delicatum.*
Plants with stolons or soboles, low, 1–2 (seldom 3) dm. high; leaf-blades oval or oblong, indistinctly denticulate.
Leaves more or less distinctly petioled.
Petals white; plant 1–3 dm. high, stoloniferous. 17. *E. alpinum.*
Petals purple or pink.
Plant 1–3 dm. high, soboliferous; flowers 5–7 mm. long. 18. *E. Hornemannii.*
Plant usually less than 1 dm. high, stoloniferous; flowers less than 5 mm. long.
Flowers nodding in the bud; pods cylindric; seeds smooth. 19. *E. anagallidifolium.*
Flowers ascending in the bud; pods somewhat clavate; seeds papillose. 20. *E. clavatum.*
Leaves sessile; plant glabrous up to the hypanthium.
Stem somewhat angled by the decurrent lines; plant stoloniferous; leaves oblong or linear, less than 1.5 cm. long. 21. *E. oregonense.*
Stem terete, without decurrent lines; plant more or less glaucous, soboliferous.
Stem-leaves linear-lanceolate. 22. *E. glaberrimum.*
Stem-leaves ovate or ovate-lanceolate. 23. *E. platyphyllum.*
Leaves narrow, linear or linear-oblong, entire or minutely denticulate; capsule cinereous.
Innovations of long subterranean shoots, bearing at their ends ovoid turions; petals white.
Leaves and lower part of the stem glabrous. 24. *E. wyomingense.*
Leaves and stem crisp-pubescent. 25. *E. lineare.*
Innovations leafy rosettes; petals pale; leaves 5–15 mm. long. 26. *E. davuricum.*
Annuals with more or less shreddy, straw-colored bark; stigma 4-cleft.
Seeds smooth; stem more or less strigose or crisp-hairy, not viscid; leaves lance-elliptic; calyx (with the tube of the hypanthium) about 2 mm. long. 27. *E. Lindleyi.*
Seeds muriculate; stem glabrous throughout or glandular above; leaves linear or narrowly linear-lanceolate; calyx usually over 2 mm. long.
Tube of the hypanthium funnelform, 1–3 mm. (rarely 4 mm.) long.
Petals white, only slightly exceeding the calyx, 2–3 mm. long; capsule glabrous; tube of hypanthium 1–1.5 mm. long. 28. *E. Tracyi.*
Petals pink or purple, 3.5–7 mm. long, about twice as long as the calyx.
Capsule and pedicels glabrous or sparingly puberulent.
Leaves and bracts very thick, horny at the apex, the latter very short; capsule glabrous; pedicels short. 29. *E. subulatum.*
Leaves and bracts not very thick, not horny at the apex; capsule usually puberulent, at least when young; pedicels slender. 30. *E. paniculatum.*
Capsule and pedicels glandular-pubescent; pedicels very short. 31. *E. adenocladon.*
Tube of the hypanthium 4–8 mm. long, cylindric or nearly so, abruptly widening into the calyx.
Tube of the hypanthium about 4 mm. long; petals 6–7 mm. long. 32. *E. laevicaule.*
Tube of the hypanthium 7–8 mm. long; petals 10–12 mm. long. 33. *E. Hammondii.*
Petals yellow; perennials; stigma 4-cleft. 34. *E. luteum.*

3. CORDYLÓPHORUM (Nutt.) Rydb. 1. *C. suffruticosum.*

4. ZAUSCHNÈRIA Presl.

Leaves ovate; lateral veins strong. 1. *Z. Garrettii.*
Leaves oblanceolate; lateral veins faint. 2. *Z. crassifolia.*

5. GAYÓPHYTUM A. Juss. Baby's Bŭeath.

Seeds canescent.
Petals 3–6 mm. long. 1. *G. eriospermum.*
Petals about 1 mm. long.
Plant diffusely branched, glabrous throughout, or upper part of the stem and capsules strigillose; capsule distinctly pedicelled. 2. *G. lasiospermum.*
Plant with strict branches, hirsutulous; pedicel of capsule very short or almost none. 3. *G. Helleri.*
Seeds glabrous.
Capsules torulose, less than three times as long as the pedicels, usually more or less clavate.
Petals 3–6 mm. long; capsules scarcely longer than the pedicels. 4. *G. diffusum.*
Petals 1–3 mm. long.
Plant pubescent with spreading hairs. 5. *G. caesium.*
Plant glabrous throughout or the young capsules strigillose.
Petals 1.5–2.5 mm. long, rose with yellow base; capsules 8–12 mm. long, nearly twice as long as the pedicels. 6. *G. intermedium.*
Petals about 1 mm. long, rose or white.
Capsules decidedly clavate, rounded at the apex, seldom longer than the pedicels, spreading or reflexed. 7. *G. ramosissimum.*
Capsules only slightly if at all clavate, narrow, usually longer than the pedicels, and erect. 8. *G. Nuttallii.*
Capsules neither torulose nor clavate; pedicel very short.
Capsules narrow, scarcely flattened, with suberect seeds. 9. *G. racemosum.*
Capsules broader, flattened contrary to the septum, with oblique seeds. 10. *G. pumilum.*

6. ISNÁRDIA L. Marsh Purslane. 1. *I. palustris.*

7. BOISDUVÁLLIA Spach.

Capsule loculicidal, a considerable portion of the septa remaining attached to the valves at dehiscence; leaves mostly alike.
Leaves ovate or ovate-lanceolate, dentate, glabrous or nearly so. 1. *B. glabella.*
Leaves narrowly lanceolate, entire or remotely denticulate, softly pubescent. 2. *B. parviflora.*
Capsule septicidal; septa adherent to the placenta, rendering the latter 4-winged; upper floral leaves broader. 3. *B. salicina.*

8. CLÁRKIA Pursh. Clarkia, Pink Fairies. 1. *C. pulchella.*

9. PHAEOSTÒMA Spach. 1. *P. rhomboidea.*

10. OENOTHÈRA L. Evening-primrose.

Free tube of the hypanthium 1.5–4 cm. long.
Petals turning pink or purplish in age, 3–4 cm. long.
Free tips of the sepals about 4 mm. long; pubescence of the leaves short, that of the calyx not very copious. 1. *O. Hookeri.*
Free tips of the sepals 2–2.5 mm. long; pubescence of the leaves long and loose, that of the calyx copious. 2. *O. hirsutissima.*
Petals not turning pink or purplish in age, less than 3 cm. long.
Free tips of the sepals 3 mm. long or longer.
Spike not conspicuously leafy-bracted; bracts lance-linear, none except the very lowest ones exceeding the hypanthium-tube or the fruit in length. 3. *O. subulifera.*
Spike conspicuously leafy-bracted; bracts, even the upper ones, exceeding the hypanthium-tube or the fruit in length.
Bracts caudate-acuminate, with twisted tips; plant canescent; corolla about 15 mm. long. 4. *O. Cockerellii.*
Bracts not caudate-acuminate.
Petals 10–12 mm. long; plant green. 5. *O. muricata.*
Petals 20–30 mm. long; plant canescent. 6. *O. ornata.*
Free tips of the sepals about 2 mm. long.
Stem erect; petals 12–20 mm. long. 7. *O. strigosa.*
Stem decumbent; petals about 10 mm. long. 8. *O. depressa.*
Free tube of the hypanthium 8–15 cm. long.
Leaves linear, entire. 9. *O. longissima.*
Leaves ovate or lanceolate, sinuate-dentate. 10. *O. Jamesii.*

11. ANÒGRA Spach. White Evening-Primrose.

Calyx in bud merely acutish; tips not free or slightly so in no. 4.
Pubescence at least in part consisting of long silky hairs.

Capsule divergent or reflexed.
Blades of the upper leaves rhombic-lanceolate to ovate in outline.
Blades of all the leaves deltoid-lanceolate, sinuate-dentate, acuminate or acute; capsule reflexed. 1. *A. deltoidea.*
Blades of the lower leaves spatulate, sinuate or round-lobed, obtuse; capsules divergent. 2. *A. Engelmannii.*
Blades of all leaves linear, oblanceolate or oblong in outline.
Leaf-blades linear or the lower linear-oblanceolate, sinuately dentate; calyx with a few long hairs. 3. *A. Buffumi.*
Leaf-blades oblanceolate or oblong in outline, sinuately pinnatifid, with oblong lobes; calyx densely silky villous. 4. *A. violacea.*
Capsule erect or ascending.
Seeds narrow, smooth, very acute at the apex; petals 1–1.75 cm. long. 5. *A. trichocalyx.*
Seeds ovoid, ridged and tubercled, rather blunt at the apex.
Branches erect; petals 1.5–2 cm. long. 6. *A. perplexa.*
Branches decumbent or merely ascending; petals 2.5–4 cm. long. 7. *A. albicaulis.*
Pubescence wholly cinereous-strigose. 8. *A. Bradburiana.*
Calyx in bud acuminate or acute; tips free.
Capsule linear-cylindric; throat of the corolla glabrous.
Leaves all long-petioled, oblanceolate, subentire; plant dwarf. 9. *A. simplex.*
Stem-leaves short-petioled or sessile; plant not dwarf.
Calyx sparingly long-hairy, glandular-puberulent, or glabrous, not strigose.
Stem-leaves deeply pinnatifid.
Plant perennial with a rhizome. 10. *A. rhizomata.*
Plant biennial, with a taproot. 4. *A. violacea.*
Stem-leaves subentire, dentate or short-lobed.
Capsules strongly ascending, straight; leaves linear or lance-linear, entire or nearly so, strigose beneath. 11. *A. Nuttallii.*
Capsules divergent, usually curved upwards; leaves usually denticulate or sometimes lobed.
Leaves glabrous, except the margins.
Calyx glabrous or nearly so; tips slender.
Leaves lanceolate to linear-lanceolate. 12. *A. pallida.*
Leaves linear or very narrowly linear-oblanceolate. 13. *A. leptophylla.*
Calyx pilose; tips very short. 14. *A. Vreelandii.*
Leaves pubescent on both sides. 15. *A. cinerea.*
Calyx and hypanthium densely grayish strigose; leaves cinereous.
Leaves linear-lanceolate, deeply pinnatifid; petals rhombic. 16. *A. runcinata.*
Leaves ovate or oblong, rarely lanceolate, dentate; petals obcordate. 17. *A. latifolia.*
Capsules oblong; throat of the corolla hairy; leaves deeply pinnatifid. 18. *A. coronopifolia.*

12. **PACHÝLOPHUS** Spach. Rock Rose, Mountain Primrose.

Plant glabrous, or nearly so. 1. *P. caespitosum.*
Plant hairy.
Plant not canescent-strigose.
Leaves lyrate-pinnatifid; apex and lobes rounded or obtuse; hairs with pustulate bases. 2. *P. Johnsoni.*
Leaves sinuately lobed or toothed, acute; hairs not pustulate at the bases.
Hypanthium, calyx, and fruit glabrous, slightly strigose or with a few scattered long hairs.
Tube of the hypanthium 3–6 cm. long; pubescence short and usually appressed. 3. *P. montanus.*
Tube of hypanthium 6–12 mm. long.
Plant acaulescent, cespitose; pod short, conic-ovoid, with very thick ridges. 4. *P. macroglottis.*
Plant more or less caulescent; pod elongate, conic-ovoid, with low ridges. 5. *P. caulescens.*
Hypanthium, calyx, and fruit densely hirsute.
Fruit subsessile, conic-ovoid, obtuse at the base.
Plant acaulescent; ridges of the fruit slightly tuberculate.
Hypanthium 8–12 cm. long; petals 3–4 cm. long. 6. *P. hirsutus.*
Hypanthium about 5 cm. long; petals about 2 cm. long. 7. *P. crinitus.*
Plant more or less caulescent; ridges of the fruit with lobed, more or less foliaceous crests. 8. *P. eximius.*
Fruit more or less stipitate, fusiform, tapering at both ends, with slightly tuberculate ridges; plant often more or less caulescent. 9. *P. marginatus.*
Plant densely canescent-strigose throughout. 10. *P. canescens.*

13. **LAVAÙXIA** Spach.

Leaves strigose-canescent. 1. *L. brachycarpa.*
Leaves green, glabrous or puberulent, with ciliate margins. 2. *L. flava.*

14. **GAURÉLLA** Small. Spotted Primrose. 1. *G. canescens.*

15. GALPÍNSIA Britton.

Whole plant strigose-cinereous. 1. *G. lavandulaefolia.*
Stem and hypanthium more or less hirsute. 2. *G. interior.*

16. MERÌOLIX Raf.

Throat of the hypanthium dark purple within, 5–6 mm. broad at the mouth. 1. *M. melanoglottis*
Throat of the hypanthium orange within, sometimes with a darker ring at the base of the stamens, 3–4 mm. broad at the mouth. 2. *M. serrulata.*

17. TARÁXIA Nutt.

Leaves entire or merely toothed. 1. *T. subacaulis.*
Leaves pinnatifid.
Hypanthium 2–5 cm. long; petals about 5 mm. long. 2. *T. breviflora.*
Hypanthium 6–10 cm. long; petals 10–14 mm. long. 3. *T. longiflora.*

18. SPHAEROSTÍGMA F. & M.

Corolla yellow, turning reddish or greenish.
Capsule fusiform. 1. *S. andinum.*
Capsule linear.
Leaves narrowly linear.
Plant glabrous, or nearly so.
Pods straight, erect. 4. *S. parvulum.*
Pods curved, often reflexed. 5. *S. flexuosum.*
Plant more or less pubescent, at least when young.
Plant strigillose; leaves usually dentate. 6. *S. strigulosum.*
Plant hirsutulous below, often glandular above; leaves usually entire, linear. 8. *S. pubens.*
Leaves oval, lanceolate, or oblong.
Petals 1–2 mm. long.
Plant dwarf, only a few centimeters high, strigillose; capsule about 2 cm. long. 9. *S. minus.*
Plant taller, 1–4 dm. high, often viscid above; capsule about 5 cm. long. 11. *S. chamaenerioides.*
Petals 5–6 mm. long. 12. *S. alyssoides.*
Corolla white to ochroleucous or rose-colored.
Capsule enlarged at the base, tapering upwards; bark shreddy.
Plant glabrous; leaf-blades oblanceolate. 2. *S. decorticans.*
Plant more or less glandular; leaf-blades ovate. 3. *S. Boothii.*
Capsule scarcely enlarged at the base, cylindric; plant pubescent; bark not shreddy.
Plant strigose or puberulent.
Leaves linear. 7. *S. refractum.*
Leaves elliptic, spatulate or lanceolate.
Petals 1–2 mm. long. 10. *S. tortum.*
Petals 5–6 mm. long. 12. *S. alyssoides.*
Plant villous.
Leaf-blades 3–5 cm. long, obovate, sparsely villous; petals 7–8 mm. long. 13. *S. macrophyllum.*
Leaf-blades 1–2.5 cm. long, densely villous; petals 3–5 mm. long. 14. *S. utahense.*

19. CHYLÍSMIA Nutt.

Flowers axillary; delicate plant 1 dm. high or less. 1. *C. pterosperma.*
Flowers in terminal racemes or panicles.
Leaf-blades simple, sinuate or entire, or pinnate with the lower leaflets much reduced.
Plant glabrous, puberulent, minutely strigose, or glandular.
Petals 3–5 mm. long; leaves glabrous. 2. *C. scapoidea.*
Petals 7–10 mm. long; leaves grayish-strigose when young. 3. *C. cruciformis.*
Plant more or less hirsute or villous, with long white hairs.
Leaves simple or with a few (1 or 2 pairs, rarely more) small lobes on the petioles; leaves and stem sparingly hairy.
Petals 10–12 mm. long; pod linear, 5–6 cm. long. 4. *C. brevipes.*
Petals 2–7 mm. long; pod clavate, less than 1.5 cm. long.
Petals 6–7 mm. long. 5. *C. Parryi.*
Petals 2–5 mm. long.
Petals 4–5 mm. long; stem tall, 3 dm. high or more, branched. 6. *C. tenuissima.*
Petals 2–3 mm. long; stem low, about 1 dm. high, simple. 7. *C. Walkeri.*
Leaves interruptedly pinnate, with several leaflets.
Petals 8–10 mm. long; leaves and lower part of the stem densely hairy. 8. *C. venosa.*
Petals 4–6 mm. long; leaves and stem sparingly hairy or glabrate. 9. *C. parviflora.*
Leaves interruptedly pinnate, the larger alternate pairs 12 or more, not reduced. 10. *C. multijuga.*

20. STENOSÌPHON Spach. 1. *S. linifolium.*

21. GAÙRA L. Butterfly Weed.

Anthers oval, attached near the middle; fruit fusiform, sessile, almost equally 8-ribbed. 1. *G. parviflora.*

Anthers linear or nearly so, attached near the base; fruit strongly 4-angled, at least above.
Fruit sessile, broadly fusiform; tall biennials. 2. *G. neomexicana.*
Fruit prolonged below into a stipe-like base.
Stipe-like base slender; fruit fusiform; tall herbaceous plant. 3. *G. coloradensis.*
Stipe-like base thick; body of the fruit pyramidal-ovoid; low plants, with subligneous base.
Plants more or less pubescent.
Leaves canescent, the lower usually oblong and sinuately toothed. 4. *G. coccinea.*
Leaves sparingly strigose, all linear or nearly so and entire. 5. *G. parvifolia.*
Plant glabrous or nearly so, except the strigose hypanthium. 6. *G. glabra.*

22. CIRCAÈA L. Enchanter's Nightshade.

Plant 1-2 dm. high; leaves sharply dentate, usually cordate at the base. 1. *C. alpina.*
Plant 3–6 dm. high; leaf-blades sinuately denticulate, usually truncate or rounded at the base. 2. *C. pacifica.*

Family 92. **HALORAGIDACEAE.** Water Milfoil Family.

Flowers monoecious or polygamous, 4-merous; stamens 4 or 8; submerged leaves finely pinnatifid. 1. Myriophyllum.
Flowers perfect, without sepals and petals; stamen 1; leaves all entire. 2. Hippuris.

1. MYRIOPHÝLLUM (Vaill.) L. Water Milfoil.

Floral leaves ovate, entire or dentate, usually shorter than the flowers. 1. *M. spicatum.*
Floral leaves pinnatifid, much longer than the flowers. 2. *M. verticillatum.*

2. HIPPÙRIS L. Mare's-tail. 1. *H. vulgaris.*

Family 93. **AMMIACEAE.** Carrot Family.

A. Fruit with the secondary ribs most prominent, in ours ellipsoid, armed with prickles: oil-tubes under the secondary ribs; leaves pinnately compound.
Stylopodium obsolete; calyx-teeth obsolete; fruit flattened dorsally. 1. Daucus.
Stylopodium conical; calyx-teeth prominent; fruit flattened laterally. 2. Caucalis.
B. Fruit with primary ribs only, or ribs wanting; oil-tubes (rarely lacking) in the intervals between the ribs.
I. Fruit scaly or spiny.
Fruit ovoid, covered with hyaline scales or tubercles; leaves coriaceous, spinosely toothed or divided; flowers in dense heads. 3. Eryngium.
Fruit with hooked spines, subglobose; flowers in simple or compound few-rayed umbels; leaves not spinose, palmately or pinnately divided. 4. Sanicula.
II. Fruit not spiny, only bristly on the ribs in *Osmorrhiza.*
a. Fruit linear, linear-oblanceolate, or linear-lanceolate in outline.
Stylopodium present; oil-tubes obsolete in the mature fruit; fruit thickened above; leafy-stemmed plants with aromatic thick roots and ternately decompound leaves with toothed segments.
Fruit attenuate at the base, bristly on the ribs. 5. Osmorrhiza.
Fruit glabrous, obtuse at the base. 6. Glycosma.
Stylopodium wanting; oil-tubes small but evident; fruit thickest below; acaulescent plants, with globose corms and ternate leaves with linear segments. 7. Leibergia.
b. Fruit oblong to orbicular in outline.
1. Fruit not compressed dorsally, terete in cross-section or somewhat compressed laterally; wings of the lateral ribs (if present) rarely much broader than those of the dorsal ribs.
a. Ribs not conspicuously winged.
* Ribs at least the dorsal ones filiform or more prominent, but not corky.
† Ribs unlike, the dorsal ones filiform, the lateral ones corky and inflexed towards those of the other carpel; commissure with a corky projection which connects the carpels to the gynophore, leaving two air spaces between the carpels, this projection, and the lateral wings; plants with corms. 8. Orogenia.
†† Ribs all nearly alike; commissure not with corky projection.
‡ Stylopodium conic.
Leafy plant with white or pinkish flowers.
Plants with fascicled tuberous roots and few narrow, mostly entire leaf-segments.
Seed-face concave with a longitudinal ridge; oil-tubes several in the intervals. 9. Eulophus.

Seed-face plane; oil-tubes solitary in the intervals. 10. ATENIA.

Plants with taproots or rhizomes.

Fruit round, with sub-globose carpels and very slender inconspicuous ribs; leaves pinnate; oil-tubes several. 11. BERULA.

Fruit ovate or oblong, with more prominent ribs.

Oil-tubes solitary in the intervals; leaves twice or thrice pinnately compound. 12. CARUM.

Oil-tubes several in the intervals; leaves ternately or ternate-pinnately compound or decompound. 13. LIGUSTICUM.

Acaulescent plants with yellowish green flowers and simply pinnate leaves; oil-tubes several in the intervals. 14. LIGUSTICELLA.

‡‡ Stylopodium flat or wanting; flowers yellow.

Leaves simple; oil-tubes wanting or continuous around the seed cavity. 15. BUPLEURUM.

Leaves compound, or only the basal ones simple; oil-tubes present and not continuous in the intervals.

Caulescent perennials, with taproots.

Oil-tubes solitary in the intervals; stylopodium wanting; root neither deep-seated nor conspicuously thickened; leaves ternately compound or the basal ones simple, cordate. 16. ZIZIA.

Oil-tubes several in the intervals; stylopodium flat; root deep-seated and usually decidedly thickened, fusiform. 17. MUSINEON.

Acaulescent cespitose perennials, with short branched caudices.

Oil-tubes 2 or 3 in each interval; divisions of the leaves filiform. 18. DAUCOPHYLLUM.

Oil-tubes solitary in the intervals; divisions of the leaves elliptic, ovate, or obovate. 19. ALETES.

** Ribs all corky.

Cespitose perennials with branched caudices; flowers yellow or yellowish.

Fruit not tubercled; dwarf acaulescent plants. 20. OREOXIS.

Fruit tubercled; stem about 3 dm. high, few-leaved. 21. HARBOURIA.

Not cespitose perennials, with short rootstocks and fibrous roots; flowers white; tall plants.

Ribs equal and prominent. 22. SIUM.

Ribs unequal; the dorsal ones very low and broad; the lateral ones prominent and thick. 23. CICUTA.

β. Ribs conspicuously winged.

Plant pseudo-scapose* from a deep-seated fleshy root; leaves fleshy, with obtuse segments.

Seed-face deeply grooved. 24. AULOSPERMUM.

Seed-face shallowly concave. 25. PHELLOPTERUS.

Plant from a cespitose caudex or rootstock.

Seed-face deeply grooved; segments of the leaves ovate or lanceolate. 26. CORIOPHYLLUS.

Seed-face broadly and shallowly concave; leaves with oblong, subulate or linear-filiform divisions.

Ribs broadly winged; main divisions of the leaves ternate; stylopodium wanting; flowers yellow, except in one species. 27. PTERYXIA.

Ribs narrow; leaves bipinnate; stylopodium present but flat; flowers white. 28. PSEUDOREOXIS.

2. Fruit flattened strongly dorsally, with the lateral ribs more or less prominently winged.

α. Stylopodium wanting.

Dorsal and intermediate ribs or some of them winged.

Wings thickened and corky towards the margin; plants pseudo-scapose from a thick deep-seated root. 29. CYMOPTERUS.

Wings not thickened towards the margin.

Leafy-stemmed plants with a taproot; calyx-teeth small and equal; leaf-segments thin, not pungent. 30. PSEUDOCYMOPTERUS.

Acaulescent plants with a cespitose caudex; calyx-teeth large and unequal, one or two much larger than the rest; leaf-segments thick and pungent. 31. PSEUDOPTERYXIA.

Dorsal ribs filiform (or in one species of *Cogswellia* somewhat margined).

Lateral wings thin, not corky; plants mostly small. 32. COGSWELLIA.

* Stem mostly subterranean, but rising somewhat above ground and bearing at the end a cluster of leaves and peduncles.

Lateral wings thick and corky; plants large. 33. LEPTOAENIA.

β. Stylopodium present.
Stylopodium depressed.
Dorsal ribs more or less winged.
Plant acaulescent or low-stemmed, with narrow leaf-segments; sepals evident; petals yellow. 34. CYNOMARATHRUM.
Plant caulescent, with broad leaf-segments; sepals obsolete; petals white. 35. ANGELICA.
Dorsal ribs filiform; plant caulescent; sepals obsolete; petals yellow. 36. PASTINACA.
Stylopodium conical.
Plants villous at least in the inflorescence; sepals obsolete.
Leaves ternate, with rounded-cordate leaflets; oil-tubes prominent, inversely clavate, only in the upper half of the carpels. 37. HERACLEUM.
Leaves once or twice pinnate; oil-tubes not prominent, running through the whole length of the carpels. 38. SPHENOSCIADIUM.
Plants glabrous, with linear or lanceolate leaf-segments.
Sepals obsolete; leaves in ours three or four times compound; oil-tubes several in the lateral intervals. 39. CONIOSELINUM.
Sepals evident; leaves in our species simply pinnate; oil-tubes solitary in all intervals. 40. OXYPOLIS.

1. DAÙCUS (Tourn.) L. CARROT.

1. *D. pusillus.*

2. CAÙCALIS L.

1. *C. microcarpa.*

3. ERÝNGIUM (Tourn.) L. RATTLESNAKE-MASTER, ERYNGO.

1. *E. articulatum.*

4. SANÍCULA (Tourn.) L. SNAKE-ROOT, SANICLE.

Leaves palmately or pedately 3–7-divided.
Styles longer than the bristles; staminate flowers often in separate umbels. 1. *S. marilandica.*
Styles shorter than the bristles; staminate flowers always intermixed with the fertile ones. 2. *S. canadensis.*
Leaves pinnately twice or thrice ternate. 3. *S. septentrionalis.*

5. OSMORRHÌZA Raf. SWEET CICELY.

Involucels of several bractlets. 1. *O. longistylis.*
Involucels lacking or of a single small bractlet.
Fruit obtuse at the apex, without a neck. 2. *O. obtusa.*
Fruit more or less constricted at the apex into a short neck.
Pedicels longer than the fruit.
Stylopodium short, broad and flat, making the fruit almost truncate at the apex; plants almost glabrous.
Corolla purple. 3. *O. purpurea.*
Corolla white. 4. *O. Leibergii.*
Stylopodium as well as the neck tapering above, the fruit therefore ending in a short beak.
Branches of the umbel in fruit ascending; fruit 15 mm. or more long; beak 2 mm. or more. 5. *O. intermedia.*
Branches of the umbel in fruit divaricate; fruit 12–13 mm. long; beak scarcely more than 1 mm. long. 6. *O. divaricata.*
Pedicels shorter than the fruit. 7. *O. brevipes.*

6. GLYCÓSMA Nutt.

Fruit 12–16 mm., rarely 18 mm. long, on erect pedicels. 1. *G. occidentalis.*
Fruit 20 mm. long or more, on spreading pedicels. 2. *G. maxima.*

7. LEIBÉRGIA Coult. & Rose. 1. *L. orogenioides.*

8. OROGÉNIA S. Wats. TURKEY PEAS.

Stem from a deep-seated round corm. 1. *O. linearifolia.*
Stem from a fusiform long root. 2. *O. Leibergii.*

9. EÙLOPHUS Nutt. 1. *E. Bolanderi.*

10. ATÈNIA H. & A. YAMP, SQUAW-ROOT.

Leaflets of all the leaves filiform to linear-lanceolate.
Leaflets filiform. 1. *A. Gairdneri.*
Leaflets linear-lanceolate. 2. *A. montana.*
Leaflets of the basal leaves ovate-lanceolate or broadly lanceolate. 3. *A. Garrettii.*

11. BÉRULA Hoffm. WATER PARSNIP. 1. *B. erecta.*

12. CÀRUM L. CARAWAY. 1. *C. carui.*

13. LIGÚSTICUM L.

Stem leafy; divisions of the leaves not filiform.
Ultimate divisions of the leaves 2–3 cm. wide; involucels none. 1. *L. verticillatum.*
Ultimate divisions of the leaves less than 2 cm. wide, laciniate or pinnatifid.
Ultimate divisions of the leaves ovate to lanceolate.
Lateral primary divisions less than half as long as the terminal one; leaves therefore appearing pinnate; oil-tubes in the intervals 3, on the commissure 6–8. 3. *L. simulans.*
Lateral primary divisions at least two-thirds as long as the terminal one; the leaves therefore appearing ternate; oil-tubes in the intervals 4–6, on commissure 6–10.
Secondary leaflets not cleft to near the midrib; fruit 4 mm. long. 2. *L. Canbyi.*
Secondary leaflets cleft to near the midrib; fruit 5–6 mm. long.
Leaves thin and dark green.
Fruit almost 5 mm. long; stylopodium conic. 4. *L. Leibergii.*
Fruit about 6 mm. long; stylopodium low and broad.
Ultimate lobes of the leaves lanceolate, 5–10 mm. long. 5. *L. Porteri.*
Ultimate lobes of the leaves ovate or oblong-ovate, usually less than 5 mm. long. 6. *L. brevilobum.*
Leaves thicker, pale green. 7. *L. affine.*
Ultimate divisions of the leaves or teeth linear or linear-lanceolate. 8. *L. filicinum.*
Plant subscapose or with a single leaf; ultimate divisions of the leaves linear-filiform. 9. *L. tenuifolium.*

14. LIGUSTICÉLLA Coult. & Rose. 1. *L. Eastwoodae.*

14. BUPLEÙRUM L.

Plant usually over 1 dm. high; bractlets lanceolate, acute, yellowish green; fruit about 5 mm. long. 1. *B. americanum.*
Plant usually less than 1 dm. high; bractlets obovate or elliptic, obtuse, dark green; fruit 3 mm. long; flowers usually purplish. 2. *B. purpureum.*

16. ZÍZIA Koch. ALEXANDERS, MEADOW PARSNIP.

Basal leaves, at least the earlier ones, simple, cordate. 1. *Z. cordata.*
Basal leaves ternate. 2. *Z. aurea.*

17. MUSÍNEON Raf.

Divisions of the leaves obovate or oblong, toothed; rachis dilated.
Fruit glabrous or slightly puberulent.
Plant evidently caulescent; basal leaf-sheath not scarious, slightly dilated. 1. *M. divaricatum.*
Plant with the stem above ground very short; basal sheath strongly dilated and scarious. 2. *M. pedunculatum.*
Fruit strongly scabrous-puberulent.
Divisions of the leaves obtuse. 3. *M. trachyspermum.*
Divisions of the leaves acute or acuminate. 4. *M. angustifolium.*
Divisions of the leaves linear or linear-oblong, entire; rachis not dilated; leaf-sheath strongly dilated. 5. *M. vaginatum.*

18. DAUCOPHÝLLUM (Nutt.) Rydb.

Leaves bi- or tri-pinnate; segments filiform; bractlets not exceeding the pedicels; seeds subterete. 1. *D. tenuifolium.*
Leaves pinnate; segments narrowly linear; bractlets longer than the pedicels; seeds somewhat depressed. 2. *D. lineare.*

19. ALÈTES Coult. & Rose.

Peduncles longer than the leaves; branches of the umbels short.
Leaflets rounded-obovate in outline; their teeth ovate; fruit 5–6 mm. long. 1. *A. obovata.*
Leaflets rhombic-cuneate in outline, incised-toothed, with lanceolate-acuminate teeth; fruit 4–5 mm. long. 2. *A. acaulis.*
Peduncles shorter than the leaves; branches of the umbels nearly as long as the peduncles. 3. *A. humilis.*

20. OREÓXIS Raf.

Oil-tubes more than one in each interval; plant less than 1 dm. high, glabrous.
Bractlets linear, entire. 1. *O. humilis.*
Bractlets obovate or oblanceolate, toothed. 2. *O. Bakeri.*
Oil-tubes solitary in each interval.
Plant less than 1 dm. high, more or less puberulent, at least the upper part of the peduncle; leaflets cleft into 1–7 linear divisions, which are 4–5 mm. long; fruit 4–5 mm. long. 3. *O. alpina.*

Plant 1–2 dm. high, glabrous; leaflets ovate or lanceolate, few-toothed, 5–15 mm. long; fruit oblong, 6–7 mm. long. 4. *O. MacDougali.*

21. HARBOÙRIA Coult. & Rose. 1. *H. trachypleura.*

22. SÌUM (Tourn.) L. Water Parsnip. 1. *S. cicutaefolium.*

23. CICÙTA L. Cow Bane, Poison or Water Hemlock.

Axils of the leaves not bearing bulblets; leaflets lanceolate.
- Bractlets scarious-margined. 1. *C. cinicola.*
- Bractlets not scarious.
  - Fruit orbicular in outline; rootstock usually horizontal or ascending. 2. *C. vagans.*
  - Fruit oval in outline; rootstock exceedingly short, erect. 3. *C. occidentalis.*

Axils of the leaves (especially the upper ones) bearing bulblets; leaflets narrowly linear. 4. *C. bulbifera.*

24. AULOSPÉRMUM Coult. & Rose.

Involucres present. 1. *A. glaucum.*
Involucres wanting.
- Corolla yellow.
  - Rachis of the primary leaf-segments dilated; secondary segments confluent, broad, toothed or merely cleft. 2. *A. longipes.*
  - Rachis of the primary leaf-segments not dilated; secondary segments distinct, finely dissected into oblong lobes. 3. *A. angustum.*
- Corolla not yellow.
  - Corolla white. 4. *A. ibapense.*
  - Corolla purple. 5. *A. planosum.*

25. PHELLÓPTERUS Nutt.

Wings of the fruit thin and broad, scarcely rugose.
- Peduncles even in fruit shorter than the leaves; wings thickened at the insertion.
  - Flowers white; fruit 6–8 mm. long. 1. *P. montanus.*
  - Flowers purple; fruit 10–14 mm. long. 2. *P. macrocarpus.*
- Peduncles at least in fruit equalling or exceeding the leaves; wings not thickened at the insertion; fruit more than 8 mm. long.
  - Involucels 1–3-nerved; corolla purplish.
    - Fruit oblong. 3. *P. bulbosus.*
    - Fruit orbicular. 4. *P. utahensis.*
  - Involucels 5–13-nerved.
    - Bracts white with green middle; corolla white or pink. 5. *P. camporum.*
    - Bracts and corolla purple. 6. *P. multinervatus.*

Wings of the fruit thick, somewhat corky and rugose. 7. *P. Jonesii.*

26. CORIOPHÝLLUS (M. E. Jones) Rydb. Indian Parsnip.

Wings thickened at the insertion.
- Leaves ternately bipinnatifid; oil-tubes solitary in each interval. 1. *C. Jonesii.*
- Leaves pinnate, with lobed or divided leaflets; oil-tubes several in each interval.
  - Leaves ovate to ovate-oblong in outline; flowers pedicelled. 2. *C. Rosei.*
  - Leaves reniform to oblong-cordate in outline; flowers sessile. 3. *C. basalticus.*

Wings not thickened at the insertion.
- Flowers purplish; oil-tubes on the commissure 8. 4. *C. purpureus*
- Flowers greenish yellow; oil-tubes on the commissure 4. 5. *C. Betheli.*

27. PTERÝXIA Nutt.

Petals yellow.
- Leaves broadly rhombic in outline.
  - Dorsal ribs with broad wings. 1. *P. foeniculacea.*
  - Dorsal ribs with narrow wings. 2. *P. Elrodi.*
- Leaves oblong or ovate in outline.
  - Pinnae very small and distant. 3. *P. petraea.*
  - Pinnae larger and crowded. 4. *P. calcarea.*

Petals white. 5. *P. albiflora.*

28. PSEUDOREÓXIS Rydb. 1. *P. bipinnatus.*

29. CYMÓPTERUS Raf.

Umbels dense, globular; petals white; involucre wanting.
- Involucels of linear to oblong bractlets.
  - Ultimate divisions of the leaves linear or linear-oblong, acutish; fruit orbicular, 6–8 mm. long. 1. *C. acaulis.*
  - Ultimate divisions of the leaves short, broadly oblong, obtuse; fruit 7–10 mm. long.
    - Bractlets oblong, rarely lanceolate, obtuse; fruit orbicular, 8–10 mm. broad; wings strongly thickened. 2. *C. Parryi.*
    - Bractlets linear or lanceolate, acute; fruit oval, 6–8 mm. broad; wings moderately thickened. 3. *C. lucidus.*
- Involucels of broad membranous, more or less 3-cleft bractlets; fruit fully 10 mm. long, broadly elliptic. 4. *C. Leibergii.*

Umbels open; petals yellow; involucre present, although often a mere vestige.
Divisions of the leaves narrow. 5. *C. Fendleri.*
Divisions of the leaves broad. 6. *C. Newberryi.*

30. PSEUDOCYMÓPTERUS Coult. & Rose.

Petals light yellow; bractlets linear-subulate, longer than the flowers.
Plant over 1 dm. high, with distinct leafy stems.
Ultimate divisions of the leaves short, ovate or lanceolate; leaves ovate in outline. 1. *P. montanus.*
Ultimate divisions of the leaves linear, elongate.
Leaves, at least the basal ones, ovate in outline. 2. *P. sylvaticus.*
Leaves, at least the basal ones, broadly rhombic in outline.
Plant slender; leaves mostly twice compound, with very long and few divisions. 3. *P. tenuifolius.*
Plant low; leaves thrice pinnate with shorter, more numerous divisions. 4. *P. multifidus.*
Plant less than 1 dm. high, nearly acaulescent. 5. *P. Tidestromii.*
Petals purple, or orange tinged with purple; bractlets linear-lanceolate or lanceolate, shorter than the flowers.
Stem 2–3 dm. high; ultimate leaf-segments narrowly linear. 6. *P. versicolor.*
Stem 0.5–1.5 dm. high, nearly leafless; ultimate divisions of the leaves short, oblong or lanceolate. 7. *P. purpureus.*

31. PSEUDOPTERÝXIA Rydb.

Leaves with long petioles; scape 1–3 dm. high.
Primary divisions of the leaves once or twice dissected, with narrowly linear divisions.
Ultimate divisions of the leaves 5–10 mm. long; fruit about 6 mm. long. 1. *P. longiloba.*
Ultimate divisions of the leaves 3–5 mm. long; fruit about 4 mm. long. 2. *P. anisata.*
Primary divisions broad, cuneate-flabellate, cleft or toothed, with short, ovate or lanceolate teeth. 3. *P. aletifolia.*
Leaves on short petioles; divisions linear; scape less than 1 dm. high. 4. *P. Hendersonii.*

32. COGSWÉLLIA Spreng. Cous, Biscuit Root, Whisk-broom Parsley.

Plants slender with thick rounded corms.
Corolla white.
Bracts not scarious.
Fruit puberulent. 1. *C. Gormani.*
Fruit glabrous.
Divisions of the leaves oblong, very short, 5 mm. long or less; oil-tubes solitary in the intervals. 2. *C. Canbyi.*
Divisions of the leaves linear, 1–7 cm. long.
Wings of the fruit more than half as broad as the body; oil-tubes none. 3. *C. Geyeri.*
Wings of the fruit less than half as broad as the body; oil-tubes several. 4. *C. farinosa.*
Bracts scarious-margined. (See *C. orientalis*, *C. nevadensis*, &c.)
Corolla yellow.
Fruit linear in outline.
Divisions of the leaves few, long and linear.
Umbellets open; pedicels 4–8 mm. long. 5. *C. ambigua.*
Umbellets compact; fruit nearly sessile. 6. *C. leptocarpa.*
Divisions of the leaves filiform. 7. *C. bicolor.*
Fruit oval in outline; divisions of the leaves oblong.
Caulescent; fruit glabrous; oil-tubes solitary in the intervals. 8. *C. circumdata.*
Acaulescent or nearly so.
Fruit puberulent; oil-tubes solitary in the intervals. 9. *C. Cous.*
Fruit glabrous; oil-tubes several in the intervals. 10. *C. montana.*
Plant generally stouter from a thickened root or rootstock, rarely corm-like.
Bractlets of the involucels many, conspicuous, often broad, or united at the base.
Bractlets obovate or spatulate; whole plant glabrous; corolla yellow.
Involucre present, consisting of a scarious sheath, sometimes produced into linear green lobes. 11. *C. concinna.*
Involucre wanting. 10. *C. montana.*
Bractlets lanceolate, oblong or linear.
Corolla white.
Bractlets scarious-margined, as well as the whole plant puberulent or rarely glabrate.
Fruit glabrous; oil-tubes solitary in the intervals. 12. *C. orientalis.*
Fruit pubescent; oil-tubes several in the intervals. 13. *C. nevadensis.*
Bractlets not scarious-margined, villous. 14. *C. macrocarpa.*
Corolla yellow or purple.
Wings of the fruit half as wide as the body or broader.
Bractlets more or less united, densely villous; corolla yellow. 15. *C. villosa.*
Bractlets distinct, less densely villous; corolla often tinged with purple. 16. *C. Jonesii.*

Wings of the fruit less than half as wide as the body; bractlets linear, distinct. 17. *C. MacDougalii.*
Bractlets of the involucels none or very few, linear or subulate.
Leaves finely dissected, with numerous small divisions.
Fruit oval in outline.
Plant glabrous throughout.
Divisions of the leaves filiform. 18. *C. Grayi.*
Divisions of the leaves oblong or broadly linear.
Flowers white; dorsal ribs of the fruit somewhat wing-margined. 19. *C. lapidosa.*
Flowers yellow; dorsal ribs of the fruit not wing-margined. 20. *C. Donnellii.*
Plant puberulent.
Leaf-sheath with broad white scarious margins; fruit puberulent. 21. *C. Sandbergii.*
Leaf-sheath not broadly scarious-margined; fruit glabrous. 22. *C. juniperina.*
Fruit oblong-linear in outline; leaves finely dissected into filiform divisions, slightly puberulent. 7. *C. bicolor.*
Leaves simply or doubly (rarely 3 or 4 times) ternate, with comparatively large divisions; flowers yellow.
Leaf-divisions linear or narrowly linear-lanceolate, mostly attenuate.
Wings of the fruit as broad as the body or broader.
Fruit glabrous; leaflets usually linear-lanceolate. 23. *C. simplex.*
Fruit puberulent; leaflets usually narrowly linear. 24. *C. leptophylla.*
Wings of the fruit narrower than the body.
Ovary and fruit glabrous. 25. *C. triternata.*
Ovary and young fruit puberulent. 26. *C. robustior.*
Leaf-divisions from linear-oblong to oval, obtuse or acutish.
Fruit puberulent; leaf-segments many; peduncles not thickened. 27. *C. anomala.*
Fruit glabrous; leaf-segments few; peduncles in fruit usually inflated at the apex.
Fruit elliptic; oil-tubes solitary in the intervals; leaflets at least twice as long as broad. 28. *C. nudicaulis.*
Fruit oval; oil-tubes several in each interval; leaflets usually not twice as long as broad. 29. *C. platyphylla.*

33. LEPTOTAÈNIA Nutt. Wild Parsnip.

Flowers yellow or salmon-colored.
Foliage puberulent; dorsal ribs faint; flowers yellow.
Fruit sessile or nearly so; staminate flowers with long pedicels. 1. *L. foliosa.*
Fruit with pedicels longer than those of the staminate flowers.
Fruit 8–12 mm. long, usually without oil-tubes; leaves finely dissected into linear divisions. 2. *L. multifida.*
Fruit 14–18 mm. long, with oil-tubes; leaves less dissected into oblong divisions. 3. *L. Eatoni.*
Foliage glabrous; dorsal ribs strong.
Fruit broadly oblong, 5–6 mm. broad. 4. *L. salmoniflora.*
Fruit narrowly oblong, 4 mm. broad. 5. *L. filicina.*
Flowers purple. 6. *L. purpurea.*

34. CYNOMARÁTHRUM (Nutt.) Coult. & Rose.

Leaves glabrous.
Leaves bipinnate.
Leaf-segments linear.
Pedicels in fruit 1–6 mm. long.
Divisions of the leaves elongate-linear, 1–5 cm. long; bractlets 5–10 mm. long. 1. *C. Nuttallii.*
Divisions of the leaves less than 1 cm. long; bractlets 3–4 mm. long. 2. *C. megarrhizum.*
Pedicels in fruit 8–16 mm. long; divisions of the leaves short, usually less than 5 mm. long. 3. *C. Parryi.*
Leaf-segments lanceolate. 4. *C. latilobum.*
Leaves biternate. 5. *C. brecciarum.*
Leaves scabrous.
Pedicels 12–18 mm. long; wings of the fruit about as broad as the body. 6. *C. Eastwoodae.*
Pedicels 2–6 mm. long; wings of the fruit half as broad as the body. 7. *C. scabrum.*

35. ANGÉLICA L. Angelica.

Oil-tubes mostly solitary in the intervals, not continuous around the seed; rays of the umbels ascending.
Involucre and involucels of several foliaceous, lacerately toothed bracts. 1. *A. Dawsoni.*
Involucre none or consisting of 1–2 small bracts.
Involucels of many bractlets.
Bractlets lanceolate, acuminate. 2. *A. Grayi.*
Bractlets linear-filiform. 3. *A. genuiflexa.*

Involucels none, or of a few linear-subulate or filiform bractlets.
Plant glabrous up to the inflorescence.
Fruit glabrous or nearly so.
Fruit 3–3.5 mm. long; oil-tubes solitary in the interval, except in the lateral ones, where they are usually in pairs. 4. *A. leporina.*
Fruit over 5 mm. long; oil-tubes solitary in all the intervals.
Leaves once pinnate, or the lower primary divisions short-petioled and again pinnate. 5. *A. pinnata.*
Leaves ternate and then pinnate, the lower primary divisions long-petiolate.
Divisions of the leaves and their teeth lanceolate, acuminate. 6. *A. arguta.*
Divisions of the leaves and their teeth ovate, acute or obtuse.
Teeth of the leaves acute; plant perfectly glabrous. 7. *A. Lyallii.*
Teeth of the leaves obtuse, with a callous mucro; leaves slightly pubescent on the sheaths, leaf-stalks, and veins beneath. 8. *A. Piperi.*
Fruit hispid; leaves twice compound.
Rays numerous; leaflets broadly ovate or obovate; pedicels longer than the fruit. 9. *A. dilatata.*
Rays few; leaflets lanceolate or linear-lanceolate; pedicels and fruit subequal. 10. *A. Kingii.*
Plant more or less scabrous or pubescent, at least on the sheath, leaf-stalks, and veins beneath.
Fruit glabrous; leaves sparingly short-hispid on the sheaths, petioles, and veins. 8. *A. Piperi.*
Fruit hispid or rough-puberulent; leaves rough-pubescent.
Oil-tubes solitary in the intervals; pedicels and fruit rough-puberulent. 11. *A. Roseana.*
Oil-tubes in pairs in the lateral intervals; pedicels and fruit hispid. 12. *A. Wheeleri.*
Oil-tubes many, continuous around the seeds; rays of the umbels widely spreading. 13. *A. ampla.*

36. PASTINÀCA L. Parsnip. 1. *P. sativa.*

37. HERACLÈUM L. Cow Parsnip, Cow Cabbage. 1. *H. lanatum.*

38. SPHENOSCIÀDIUM A. Gray. 1. *S. capitellatum.*

39. CONIOSELÌNUM Fisch. Hemlock-Parsley.

Fruit fully 6 mm. long; oil-tubes 1 or 2 in each interval. 1. *C. scopulorum.*
Fruit about 5 mm. long; oil-tubes 2–5 in each interval. 2. *C. coloradense.*

40. OXÝPOLIS Raf. 1. *O. Fendleri.*

Family 94. **ARALIACEAE.** Ginseng Family.

Petals imbricate; drupe 5-celled; leaves pinnately or ternately compound; ours unarmed herbs. 1. Aralia.
Petals valvate in the buds; drupe 2- or 3-celled; leaves simple, palmately lobed; prickly shrubs. 2. Echinopanax.

1. ARÀLIA (Tourn.) L. Sarsaparilla, Spikenard, Wild Ginseng.
1. *A. nudicaulis.*

2. ECHINOPÀNAX Dec. & Planch. Devil's Club, Devil's Walking-stick.
1. *E. horridum.*

Family 95. **CORNACEAE.** Dogwood Family.

Flowers dioecious; stigmas lateral; staminate flowers in ament-like spikes. 1. Garrya.
Flowers perfect, cymose or umbellate; stigmas terminal.
Flowers in open cymes, not subtended by an involucre; shrubs. 2. Svida.
Flowers in head-like umbels, subtended by an involucre of 4 white leaves; herbs with rootstocks. 3. Chamaepericlimenum.

1. GÁRRYA A. Gray. 1. *G. flavescens.*

2. SVÌDA Opiz. Cornel, Dogwood, Kinnikinnik.

Young branches and inflorescence villous.
Leaves broadly oval or ovate, the larger obtuse at the base, densely villous beneath; inflorescence long-villous; stone usually broader than long. 1. *S. pubescens.*

Leaves ovate or ovate-lanceolate, acute at the base, silky beneath or slightly villous on and near the veins; inflorescence short-villous; stone as long as broad or longer. 2. *S. interior.*
Young branches appressed-strigose or nearly glabrous. 3. *S. instolonea.*

3. CHAMAEPERICLÍMENUM Aschers. & Graebn. BUNCHBERRY.

Flowers greenish; stone smooth, higher than broad. 1. *C. canadense.*
Flowers purple; stone ridged on each side, as broad as long. 2. *C. unalaschkense.*

FAMILY 96. PYROLACEAE. WINTERGREEN FAMILY.

Plants leafy-stemmed; flowers corymbose; style very short and ending in the peltate stigma; filaments dilated and hairy at the middle. 1. CHIMAPHILA.
Plant scapose, with a basal rosette of leaves; flowers racemose or solitary; style evident; filaments subulate, naked.
  Flowers solitary; petals spreading; valves of the capsule not cobwebby on the margins. 2. MONESES.
  Flowers racemose; petals more or less converging, concave; valves of the capsule cobwebby on the margins when opening.
    Flowers without hypogynous disk; petals without tubercles.
      Style exserted, deflexed, curved; stigma narrower than the style. 3. PYROLA.
      Style short, straight; stigma thicker than the style, peltate. 4. ERXLEBENIA.
    Flowers with a 10-lobed hypogynous disk; petals with a pair of tubercles at the base. 5. RAMISCHIA.

1. CHIMÁPHILA Pursh. PIPSISSEWA, PRINCE'S PINE.

Leaves lanceolate to ovate, broadest below the middle, usually pale-mottled along the midveins; dilated portion of the filaments hairy. 1. *C. Menziesii.*
Leaves oblanceolate, broadest above the middle; dilated portion of the filaments hairy only along the margins. 2. *C. occidentalis.*

2. MONÈSES Salisb. ONE-FLOWERED WINTERGREEN, SINGLE BEAUTY.

Leaf-blades orbicular or obovate, crenate, usually rounded at the apex. 1. *M. uniflora.*
Leaf-blades ovate, strongly reticulate, serrate, usually acute or acutish at the apex. 2. *M. reticulata.*

3. PÝROLA (Tourn.) L. WINTERGREEN.

Leaves ample, not scale-like.
  Leaves not mottled.
    Leaves not spatulate, dark green.
      Petals pink or purplish.
        Leaf-blades crenulate, not callous-denticulate, obtuse.
          Leaf-blades round-reniform to orbicular. 1. *P. asarifolia.*
          Leaf-blades orbicular to round-ovate. 2. *P. uliginosa.*
        Leaf-blades more or less distinctly callous-denticulate by the protruding ends of the veins, rounded-ovate, acute. 3. *P. bracteata.*
      Petals white or greenish.
        Leaf-blades oval, longer than the petioles. 4. *P. elliptica.*
        Leaf-blades orbicular, usually shorter than the petioles. 5. *P. chlorantha.*
    Leaves spatulate, pale or yellowish green. 6. *P. dentata.*
  Leaves mottled. 7. *P. picta.*
Leaves reduced to lanceolate scales. 8. *P. aphylla.*

4. ERXLEBÈNIA Opiz. 1. *E. minor.*

5. RAMÍSCHIA Opiz. 1. *R. secunda.*

FAMILY 97. MONOTROPACEAE. INDIAN PIPE FAMILY.

Flowers in elongate racemes; corolla gamopetalous, globular or nearly so; anther 2-awned. 1. PTEROSPORA.
Flowers in short, few-flowered racemes, or solitary; corolla of 4–6 erect, distinct petals; anthers awnless.
  Flowers solitary; stigma naked. 2. MONOTROPA.
  Flowers racemose; terminal flower 5-merous, the lateral ones 3- or 4-merous; stigma glandular or hairy on the margins. 3. HYPOPITYS.

1. PTERÓSPORA Nutt. PINE-DROPS, GIANT BIRD'S-NEST. 1. *P. Andromedea.*

2. MONÓTROPA L. INDIAN PIPE. 1. *M. uniflora.*

3. HYPÓPITYS (Dill.) Adans. PINESAP. 1. *H. latisquama.*

FAMILY 98. ERICACEAE. HEATH FAMILY.

Fruit a capsule.
  Fruit septicidal; valves separating from the central columella, which bears the placentae; anther awnless.

Petals distinct, spreading; flowers from separate strobilaceous buds. 1. LEDUM.
Petals united, forming a gamopetalous corolla.
Corolla without sacs for the anthers.
Corolla large, white, rotate or rotate-campanulate. 2. AZALIASTRUM.
Corolla small, urceolate or campanulate.
Heath-like evergreen undershrubs, with the flowers umbellately or racemosely arranged at the ends of the branches, from the axils of the leaves. 3. PHYLLODOCE.
Deciduous-leaved shrubs, with the flowers from strobilaceous buds, ending the branches of the preceding year. 4. MENZIESIA.
Corolla rotate, with 10 sacs enclosing the anthers in bud. 5. KALMIA.
Fruit loculicidal; the valves carrying with them the partitions; anthers in our genera awned.
Calyx and hypanthium neither accrescent, nor enclosing the capsule, nor berry-like.
Sepals or calyx-lobes valvate in bud; corolla globose-urceolate; shrubs; leaves neither imbricate nor scale-like. 6. ANDROMEDA.
Sepals imbricate in the bud; corolla campanulate; undershrubs, with scale-like imbricate leaves. 7. CASSIOPE.
Calyx and hypanthium accrescent, enclosing the capsule, berry-like. 8. GAULTHERIA.
Fruit a drupe or berry.
Leaves thin, deciduous; fruit juicy. 9. ARCTOUS.
Leaves evergreen, leathery; fruit mealy. 10. ARCTOSTAPHYLOS.

1. LÈDUM L. Labrador Tea.

Leaves densely ferruginous-tomentose beneath and with strongly revolute margins. 1. *L. groenlandicum.*
Leaves glabrous on both sides, paler and glandular-punctate beneath, not revolute. 2. *L. glandulosum.*

2. AZALIÁSTRUM (Planch.) Rydb. White Rhododendron, Azalea.

Leaves hirsute with brown hairs. 1. *A. albiflorum.*
Leaves glabrate, only glandular-ciliolate on the margins. 2. *A. Warrenii.*

3. PHYLLÓDOCE Salisb. Mountain Heath.

Corolla not contracted at the throat, open-campanulate, rose-colored to scarlet; sepals obtuse. 1. *P. empetriformis.*
Corolla urceolate, contracted at the throat, yellow; sepals acute. 2. *P. glanduliflora.*

4. MENZIÈSIA Smith.

Pedicels and petioles glandular-puberulent; seeds tailed at both ends; leaf-blades obtuse. 1. *M. glabella.*
Pedicels and petioles glandular-hirsute; seeds merely apiculate at the ends; leaf-blades acute. 2. *M. ferruginea.*

5. KÁLMIA L. American Laurel, Swamp Laurel. 1. *K. microphylla.*

6. ANDRÓMEDA L. Bog Rosemary. 1. *A. polifolia.*

7. CASSÌOPE D. Don. Moss-plant, White Heather.

Leaves with a deep furrow on the back. 1. *C. tetragona.*
Leaves without furrow on the back. 2. *C. Mertensiana.*

8. GAULTHÈRIA (Kalm) L. Creeping Wintergreen.

Glabrous; leaves oval or orbicular. 1. *G. humifusa.*
Calyx, pedicels, and upper part of the stem sparingly hirsute; leaves ovate. 2. *G. ovatifolia.*

9. ARCTÒUS (A. Gray) Niedzu. Alpine Bearberry.

Fruit black; corolla-lobes ciliate; leaves less than 3 cm. long. 1. *A. alpina.*
Fruit red; corolla-lobes not ciliate; leaves usually more than 3 cm. long. 2. *A. erythrocarpa.*

10. ARCTOSTÁPHYLOS Adans. Bearberry, Kinnikinick, Manzanita.

Depressed creeping glabrous plant, with spatulate leaves. 1. *A. Uva-ursi.*
Erect shrubs or trees, 1–6 m. high, with oval leaves.
Young branches puberulent; leaves usually pungent-cuspidate. 2. *A. pungens.*
Branches glabrous; leaves usually not cuspidate. 3. *A. platyphylla.*

Family 99. **VACCINIACEAE.** Huckleberry Family.

Petals united into a gamopetalous corolla.
Ovary half-inferior; berry white, acute; low creeping plants. 1. Chiogenes.
Ovary wholly inferior; berry blue, black, or red, rounded; shrubs or undershrubs.
Filaments glabrous; anthers 2-awned on the back; leaves deciduous. 2. Vaccinium.
Filaments pubescent; anthers awnless.
Ovary and berry incompletely 10-celled, by a false partition, intruding from the back of each cell; leaves thin, deciduous. 3. Cyanococcus.
Ovary and berry 4- or 5-celled; no false partitions; leaves leathery, persistent. 4. Vitis-Idaea.
Petals distinct; delicate prostrate vines. 5. Oxycoccus.

1. **CHIÓGENES** Salisb. Creeping Snowberry, Moxie Plum, Capillaire.

1. *C. hispidula.*

2. **VACCÍNIUM** L. Bilberry, Whortleberry, Huckleberry.

Branches not angled.
Leaves entire-margined.
Leaves broadly obovate or oval, strongly reticulate. 1. *V. uliginosum.*
Leaves oblong-obovate to oblanceolate, pale, not strongly reticulate. 2. *V. occidentale.*
Leaves serrate. 3. *V. caespitosum.*
Branches angled.
Fruit purplish, black, or blue; leaves more than 1 cm. long.
Corolla depressed-globular; fruit purple; leaves obtuse or acute, crenulate or subentire. 4. *V. globulare.*
Corolla rounded-ovoid.
Leaves subentire, obtuse; fruit blue, with a bloom. 5. *V. ovalifolium.*
Leaves serrate, acute or acuminate; fruit black, without a bloom.
Shrub tall; leaves 2–5 cm. long; fruit 8–10 mm. in diameter. 6. *V. membranaceum.*
Shrub low, 1–3 dm. high; leaves 1–1.5 cm. long; fruit 5–8 mm. in diameter. 7. *V. oreophilum.*
Fruit bright red; leaves usually less than 1 cm. long.
Leaves serrate, light green on both sides. 8. *V. scoparium.*
Leaves entire, dull and pale, especially beneath. 9. *V. parvifolium.*

3. **CYANOCÓCCUS** (A. Gray) Rydb. Blueberry.

Leaves entire, as well as the branches pubescent. 1. *C. canadensis.*
Leaves serrate, glabrous, except sometimes the veins and margins; branches glabrous or with pubescent lines. 2. *C. pennsylvanicus.*

4. **VÌTIS-IDAÈA** (Tourn.) Moench. Mountain Cranberry, Swedish Cranberry.

1. *V. Vitis-Idaea.*

5. **OXYCÓCCUS** (Tourn.) Hill. Cranberry.

Leaves ovate or lanceolate, 4–8 mm. long; fruit globose; bracts subulate or filiform.
Leaves strongly revolute, acute; fruit 6–9 mm. in diameter; flowers strictly terminal. 1. *O. Oxycoccus.*
Leaves not revolute, mostly obtusish; fruit 10–12 mm. in diameter; flowers often surpassed by a leafy shoot. 2. *O. intermedius.*
Leaves elliptic or oblong, obtuse, 6–14 mm. long; flowers mostly lateral; bractlets lanceolate or oblong, foliaceous; fruit rounded-ellipsoid. 3. *O. macrocarpus.*

Family 100. **PRIMULACEAE.** Primrose Family.

Ovary wholly superior and free.
Corolla present.
Corolla-lobes erect or spreading; stamens distinct, except in *Lysimachia.*
Corolla salverform or funnelform, its lobes imbricate; stamens included; plants scapose; leaves in rosettes, either on the basal crown or at the ends of short branches of the caudex.
Corolla-tube equalling or exceeding the calyx; style filiform.
Truly scapose perennials, simple, bearing a single tuft of leaves on the short crown; seeds numerous. 1. Primula.
Low suffruticose perennials; leaves rosulate or imbricate at the ends of the branches of the caudex; seeds few. 2. Douglasia.
Corolla-tube shorter than the calyx, its throat constricted; style very short.
Cespitose, rosulate perennials; capsule few-seeded. 3. Drosace.
Scapose annuals; capsule many-seeded. 4. Androsace.
Corolla rotate, its lobes convolute or involute in bud; stamens exserted; plants leafy-stemmed.
Capsule opening lengthwise; erect plants.
Flowers mostly 7-merous; corolla white; proper leaves clustered near the top of the stem, the lower ones reduced. 5. Trientalis.

Flowers mostly 5-merous; leaves scattered on the stem, opposite or verticillate.
Staminodia wanting; filaments united at the base; flowers solitary or racemose. 6. LYSIMACHIA.
Staminodia present; filaments distinct.
Flowers solitary; staminodia conspicuous; corolla-lobes broad. 7. STEIRONEMA.
Flowers in short axillary spikes; staminodia tooth-like; corolla-lobes long and linear. 8. NAUMBURGIA.
Capsule circumscissile; low depressed herbs.
Corolla longer than the calyx; filaments pubescent, adnate to the base of the corolla. 9. ANAGALLIS.
Corolla shorter than the calyx; filaments glabrous, adnate to the corolla-tube. 10. CENTUNCULUS.
Corolla-lobes reflexed; stamens more or less monadelphous; plants scapose. 12. DODECATHEON.
Corolla wanting; calyx with 5 petaloid lobes; flowers solitary, sessile, axillary. 11. GLAUX.
Ovary partly inferior, the lower portion included in and adnate to the hypanthium; plant leafy-stemmed. 13. SAMOLUS.

1. PRÍMULA L. PRIMROSE, COWSLIP.

Bracts of the involucres more or less gibbous at the base; lobes of the corolla deeply 2-cleft.
Plant usually less than 1 dm. high, rarely mealy.
Calyx about one-half as long as the corolla-tube; lobes oblong, obtuse; leaves thin. 1. *P. mistassinica.*
Calyx at least two-thirds as long as the corolla-tube; lobes acutish; leaves rather thick. 2. *P. MacCalliana.*
Plant taller, 1–4 dm. high, usually more or less mealy; leaves oblong or oblong-spatulate.
Bracts lanceolate, thick, obtusish. 3. *P. incana.*
Bracts linear-subulate, thin. 4. *P. specuicola.*
Bracts of the involucres not gibbous below; lobes of the corolla merely emarginate or notched, or entire.
Plant less than 1 dm. high, 1–few-flowered; flowers less than 2 cm. long.
Scape usually 1-flowered, rarely 2-flowered; bracts subulate, small, less than 5 mm. long. 5. *P. angustifolia.*
Scapes 2–4-flowered; bracts conspicuous, oblong, more than 5 mm. long. 6. *P. Broadheadae.*
Plant 1.5–5 dm. high, many-flowered; flowers more than 2 cm. long. 7. *P. Parryi.*

2. DOUGLÁSIA Lindl. MOUNTAIN PINK.

Peduncles with several flowers in an umbel; leaves stellate-pruinose, not ciliate. 1. *D. nivalis.*
Peduncles 1–3-flowered; leaves ciliolate on the margins. 2. *D. montana.*

3. DRÓSACE A. Nels.

Leaves without thickened midrib, linear-oblanceolate, about 1 cm. long; pedicels much longer than the calyx, nearly equalling the bracts. 1. *D. albertina.*
Leaves oblanceolate, about 5 mm. long, at least the old ones with the midrib thickened on the under side; pedicels shorter than the calyx. 2. *D. carinata.*

4. ANDRÓSACE (Tourn.) L.

Calyx-tube in fruit obpyramidal, its green teeth surpassing the capsule.
Bracts of the involucre ovate or oblong.
Calyx-teeth longer than the tube; leaves linear-oblanceolate, thin. 1. *A. arizonica.*
Calyx-teeth shorter than the tube; leaves spatulate or oblanceolate, thicker.
Scapes and pedicels several, diffuse or ascending. 2. *A. occidentalis.*
Scape single, 1–4-flowered, erect; pedicels almost erect. 3. *A. simplex.*
Bracts of the involucre lanceolate or subulate.
Calyx-teeth erect, lanceolate, usually shorter than the tube.
Peduncles, pedicels and calyx-lobes densely puberulent, the latter exceeding the fruit. 4. *A. puberulenta.*
Peduncles and pedicels sparingly puberulent or glabrous; calyx-lobes glabrous or nearly so, not exceeding the fruit.
Corolla longer than the calyx.
Peduncles 1–2 dm. high, many times longer than the strongly ascending or suberect pedicels.
Calyx-lobes triangular, less than half as long as the calyx-tube. 5. *A. septentrionalis.*
Calyx-lobes lanceolate, more than half as long as the calyx-tube. 6. *A. pinetorum.*
Peduncles less than 3 cm. high, often equalled or exceeded in length by the spreading pedicels. 7. *A. subumbellata.*
Corolla shorter than the calyx. 8. *A. diffusa.*
Calyx-teeth more or less spreading, ovate-triangular, foliaceous, equalling or exceeding the whitish tube; corolla shorter than the calyx. 9. *A. subulifera.*

Calyx-tube in fruit hemispherical; teeth broadly triangular. 10. *A. filiformis.*

5. TRIENTÀLIS L. Starflower.

Lower reduced leaves lanceolate to linear-subulate, acute, scale-like.
Verticillate leaves lanceolate, long-acuminate. 1. *T. americana.*
Verticillate leaves broadly oval or obovate, acute or abruptly acuminate. 2. *T. latifolia.*
Lower reduced stem-leaves oblanceolate or spatulate, obtuse. 3. *T. arctica.*

6. LYSIMÀCHIA (Tourn.) L. Loosestrife. 1. *L. terrestris*

7. STEIRONÈMA Raf. Fringed Loosestrife. 1. *S. ciliatum.*

8. NAUMBÚRGIA Moench. Tufted Loosestrife. 1. *N. thyrsiflora.*

9. ANAGÁLLIS (Tourn.) L. Poor Man's or Shepherd's Weatherglass. Pimpernel. 1. *A. arvensis.*

10. CENTÚNCULUS L. False Pimpernel, Chaffweed. 1. *C. minimus*

11. GLAÚX (Tourn.) L. Black Saltwort, Sea Milkwort. 1. *G. maritima.*

12. DODECÀTHEON L. Shooting Star, American Cowslip, Bird-bills.

Anthers subsessile or nearly so; tube of the filaments if any less than 0.5 mm. long.
Leaf-blades thin, ovate, sinuately dentate, truncate, subcordate or obtuse at the base; anthers strictly sessile. 1. *D. dentatum.*
Leaf-blades thicker, linear, oblanceolate or oval, entire or minutely denticulate, gradually tapering at the base.
Filaments purple; plant with a distinct, often bulbiferous rootstock.
Leaf-blades linear or narrowly linear-oblanceolate, entire.
Plant low; corolla-lobes 10–18 mm. long. 2. *D. alpinum.*
Plant tall; corolla-lobes 20–25 mm. long. 3. *D. Jeffreyi.*
Leaf-blades broadly oblanceolate or elliptic; margins callous-denticulate. 4. *D. viviparum.*
Filaments yellow; rootstock merely a short vertical crown, bearing the leaves and fleshy roots; bulblets none.
Leaves glabrous.
Leaves distinctly petioled.
Scape low, few-flowered; capsule circumscissile near the apex; connective rugose.
Leaf-blades oval, elliptic, or obovate; capsule 10–12 mm. long. 5. *D. conjugens.*
Leaf-blades oblanceolate or oblong, spatulate; capsule 15–20 mm. long. 6. *D. cylindrocarpum.*
Scape tall, many-flowered; capsule opening by valves from the apex, connective not rugose. 7. *D. multiflorum.*
Leaves subsessile. 8. *D. pulchrum.*
Leaves pubescent. 9. *D. pubescens.*
Anthers not subsessile; filaments united into a distinct tube, 1–3 mm. long.
Leaves glabrous.
Capsule circumscissile near the apex; anthers more than twice as long as the tube of the filaments.
Filaments and throat of the corolla indigo blue; leaf-blades obovate. 10. *D. Hendersoni.*
Filaments and throat of the corolla yellow.
Petals oblong-lanceolate, obtuse or acutish. 6. *D. cylindrocarpum.*
Petals lanceolate, long-acuminate. 11. *D. acuminatum.*
Capsule opening by valves from the apex.
Anthers more than twice as long as the short filaments.
Leaf-blades oval or oblong; bracts oblong, mostly obtuse; plant slender; flowers 1–3 (rarely 4–5). 12. *D. philoscia.*
Leaf-blades oblanceolate; bracts lanceolate, acute; plant usually stout and many-flowered. 13. *D. radicatum.*
Anthers less than twice as long as the filaments.
Whole plant glabrous.
Bracts lanceolate, acute; anthers 4–5 mm. long, half longer than the filament-tube. 14. *D. pauciflorum.*
Bracts oblong, obtuse; anthers 3–4 mm. long, only slightly longer than the filament-tube. 15. *D. salinum.*
Bracts, upper part of the peduncle, and pedicels puberulent; bracts small, lanceolate, acute; anthers 3–4 mm. long. 16. *D. puberulentum.*
Leaves pubescent.
Plant 1–2 dm. high, usually more than one-flowered; leaves with long petioles. 17. *D. Cusickii.*
Plant about 5 cm. high, usually 1-flowered; petioles obsolete. 18. *D. uniflorum.*

13. SÁMOLUS (Tourn.) L. Water Pimpernel, Brookweed. 1. *S. floribundus.*

Family 101. **OLEACEAE.** Olive Family.

Fruit indehiscent; plant dioecious or polygamous; corolla in ours wanting; calyx-lobes 4.
  Fruit a samara. 1. Fraxinus.
  Fruit a drupe. 2. Forestiera.
Fruit a dehiscent, didymous capsule; flowers perfect; corolla present, roate, 5-lobed; calyx 5-15 lobed. 3. Menodora.

1. **FRÁXINUS** (Tourn.) L. Ash.

Flowers polygamous; leaves simple or rarely 3-foliolate. 1. *F. anomala.*
Flowers dioecious; leaves pinnately 5–9-foliolate.
  Leaflets sessile, rather thin. 2. *F. campestris.*
  Leaflets petiolulate, thick, subcoriaceous. 3. *F. coriacea.*

2. **FORESTIÈRA** Poir. 1. *F. neomexicana.*

3. **MENODÒRA** H.B.K. 1. *M. scabra.*

Family 102. **LOGANIACEAE.** Logania Family.

1. **BUDDLÈIA** L. 1. *B. utahensis*

Family 103. **GENTIANACEAE.** Gentian Family.

Corolla not spurred.
  Style filiform, mostly deciduous.
    Corolla small, red, rose, or yellowish; tube surpassing the calyx; filaments spirally twisted. 1. Centaureum.
    Corolla large, blue, purple, or white; tube much shorter than the calyx; stamens recurved. 2. Eustoma.
  Style stout, short, persistent, or none.
    Corolla without nectariferous pits, glands (except in species of *Amarella*), or scales.
      Corolla campanulate, funnelform, or salver-shaped; calyx 4- or 5-lobed; stamens inserted in the corolla-tube.
        Corolla without plaits or lobes in the sinuses; calyx without an inter-calycine membrane; sepals imbricate.
          Flowers 4-merous, rather large, usually more than 3 cm. long; corolla-lobes more or less fringed or toothed; inner sepals broader, membranous-margined. 3. Anthopogon.
          Flowers 5-merous (rarely 4-merous), small, less than 2 cm. long; outer sepals broader; corolla-lobes never fringed, rarely toothed. 4. Amarella.
        Corolla plicate in the sinuses, the plaits more or less extended in membranous lobes or teeth; calyx with an inter-calycine membrane; its lobes valvate.
          Anthers cordate-versatile; dwarf annuals or biennials, with terminal solitary flowers. 5. Condrophylla.
          Anthers linear or oblong, extrorse; perennials, with mostly axillary flowers. 6. Dasystephana.
      Corolla rotate; calyx parted to near the base; stamens inserted on the base of the corolla. 7. Pleurogyne.
    Corolla rotate, with nectariferous pits, glands, or scales.
      Style none; leaves opposite, rarely alternate; corolla without a crown at the base. 8. Swertia.
      Style manifest; leaves opposite or verticillate.
        Each division of the corolla with a single gland; capsule flattened parallelly to the valves.
          Corolla without a crown; leaves not white-margined. 9. Frasera.
          Corolla with a decurrent crown contiguous with the gland; leaves white-margined. 10. Leucocraspedum.
        Each division of the corolla with a pair of oblong glands and a separate crown below; capsule flattened contrary to the valves. 11. Tessaranthium.
Corolla spurred. 12. Tetragonanthus.

1. **CENTAÙREUM** Hill. Centaury.

Corolla-lobes 4–6 mm. long, about half as long as the tube; annuals.
  Corolla-lobes oblong, obtuse. 1. *C. exaltatum.*
  Corolla-lobes ovate or lanceolate, acute. 2. *C. Nuttallii.*
Corolla-lobes 7–10 mm. long, about three-fourths as long as the tube; perennials. 3. *C. arizonicum.*

2. **EUSTÒMA** Salisb. 1. *E. Russellianum.*

3. **ANTHOPÒGON** Necker. Fringed Gentian.

Annuals or biennials; flowers on naked long peduncles terminating the branches, not bracteate.

Corolla enclosed in the ventricose wing-angled calyx. 1. *A. ventricosus.*
Corolla much longer than the merely angled calyx.
Inner calyx-lobes ovate, fully twice as broad as the outer linear-lanceolate ones; stem-leaves linear.
Filaments hairy at the middle. 2. *A. Macounii.*
Filaments glabrous. 3. *A. tonsus.*
All calyx-lobes lanceolate, the inner not twice as broad as the outer ones; stem-leaves oblong or lanceolate.
Inner calyx-lobes decidedly broader than the outer; corolla-lobes distinctly fringed on the sides. 4. *A. thermalis.*
Inner calyx-lobes slightly broader than the outer; corolla-lobes dentate, rarely with a few bristles on the sides. 5. *A. simplex.*
Perennials with a taproot; flowers short-peduncled in the axils of two bract-like leaves. 6. *A. barbellatus.*

4. AMARÉLLA Gilib. Gentian.

Corolla with a fringed crown in the throat; glands at the base of the corolla obsolete or wanting.
Flowers solitary on 2–10 cm. long peduncles; stems depressed, cespitose. 1. *A. monantha.*
Flowers numerous, short-peduncled; stem erect, more leafy, simple at the base.
Calyx-lobes very unequal, the outer two large, foliaceous, ovate or oval, much broader than the rest. 2. *A. heterosepala.*
Calyx-lobes somewhat unequal, but all oblong, lanceolate, or linear.
Stem-leaves lanceolate or broader.
Flowers numerous, crowded, very short-pedicelled, the whole inflorescence dense and spike-like; leaves usually equalling or exceeding the internodes. 3. *A. strictiflora.*
Flowers comparatively few, distinctly pedicelled; middle internodes elongate and usually longer than the leaves.
At least the outer calyx-lobes lance-oblong; stem-leaves, except the uppermost, oblong or oval, obtuse. 4. *A. anisosepala.*
Calyx-lobes linear or linear-lanceolate; stem-leaves lanceolate or ovate-lanceolate, acute.
Larger calyx-lobes usually half as long as the corolla or longer; plant stout, 2–4 dm. high; stem-leaves lanceolate. 5. *A. scopulorum.*
Calyx-lobes less than half as long as the corolla; plant slender, 1–2 dm., seldom 3 dm. high; stem-leaves usually ovate-lanceolate. 6. *A. plebeia.*
Stem-leaves linear or linear-lanceolate. 7. *A. tortuosa.*
Corolla without a crown; glands at the base of the corolla evident.
Corolla-lobes obtuse or merely acute, not cuspidate; leaves narrowly linear-lanceolate. 8. *A. ventorum.*
Corolla-lobes cuspidate-tipped.
Stem-leaves lanceolate, rarely ovate-lanceolate; corolla-lobes lanceolate to ovate. 9. *A. propinqua.*
Stem-leaves ovate; corolla-lobes broadly ovate. 10. *A. arctophila.*

5. CHONDROPHÝLLA A. Nels. Moss Gentian.

Leaves and calyx-lobes with broad scarious margins; capsule long-stipitate, at last exserted from the corolla. 1. *C. Fremontii.*
Leaves and calyx-lobes slightly scarious-margined; capsule short-stipitate, not exserted. 2. *C. americana.*

6. DASYSTÉPHANA Adans. Gentian.

Seed-coats lamellose-rugose, the lamellae white, forming hexagonal areas; basal rosettes of leaves remaining at flowering time; perennials with short rootstocks.
Corolla 12–18 mm. long; leaves ovate or oval. 1. *D. glauca.*
Corolla 30–40 mm. long; leaves linear or linear-oblanceolate. 2. *D. Romanzovii.*
Seed-coats smooth, but often produced into wings; basal rosettes none at flowering time; cespitose perennials.
Corolla closed; lobes in ours obsolete or nearly so; limb as well as the plaits incurved. 3. *D. Andrewsii.*
Corolla open, campanulate; lobes spreading or ascending.
Calyx-lobes broadly ovate or oval; seeds wingless.
Corolla-lobes rounded at the apex; calyx-tube 5–6 mm. long. 4. *D. obtusiloba.*
Corolla-lobes acute; calyx-tube 7–10 mm. long.
Leaves broadly ovate, usually obtuse at the apex and subcordate at the base; calyx-lobes obtuse. 5. *D. calycosa.*
Leaves ovate or lance-ovate, acute at both ends; calyx-lobes acute. 6. *D. monticola.*
Calyx-lobes linear, lanceolate, or none.
Floral leaves more or less broadened and more or less scarious; seeds usually wingless. 7. *D. Parryi.*
Floral leaves narrow, not scarious; seeds winged.
Calyx-lobes erect or none; corolla-lobes ascending or nearly erect, not toothed; plaits equally lobed.
Flower-cluster dense, its branches, peduncles, and internodes very short.
Leaves all except the floral ones ovate, oblong, or lanceolate.
Calyx-lobes well developed; calyx-tube truncate at the apex.

Leaves ovate or rarely lanceolate; calyx-lobes oblong or oblong-lanceolate; corolla open-funnelform. 8. *D. oregana.*
Leaves oblong or lanceolate; calyx-lobes linear or linear-lanceolate; corolla narrowly funnelform. 9. *D. affinis.*
Calyx-lobes none or minute; calyx-tube irregular, more or less lobed or cleft. 10. *D. Forwoodii.*
Upper stem-leaves linear or lance-linear.
Plant erect, many-flowered; corolla nearly cylindraceous, 2–2.5 cm. long. 11. *D. Bigelovii.*
Plant decumbent, few-flowered; corolla funnelform, 2.5–3 cm. long, or more. 9. *D. affinis.*
Flower-cluster lax, its branches, lower peduncles, and internodes elongate. 12. *D. interrupta.*
Calyx-lobes widely spreading, linear-lanceolate; corolla-lobes in anthesis strongly spreading, more or less denticulate; plaits unequally 2-lobed. 13. *D. puberula.*

7. PLEURÓGYNE Eschsch. Marsh Felwort. 1. *P. fontana.*

8. SWÉRTIA L.

Inflorescence elongate; corolla-lobes linear or oblong.
Leaves with 3–5 parallel ribs from the base. 1. *S. parallela.*
Leaves not parallel-ribbed.
Petals not spotted; basal leaf-blades much longer than the petioles. 2. *S. scopulina.*
Petals spotted; basal leaf-blades not longer than the petioles. 3. *S. Fritillaria.*
Inflorescence congested; corolla-lobes oval-elliptic. 4. *S. congesta.*

9. FRÀSERA Walt. American Columbo. 1. *F. fastigiata.*

10. LEUCOCRÁSPEDUM Rydb.

Scales between the stamens wanting (represented by merely hairs); corolla greenish yellow.
Basal leaves oblanceolate; lower stem-leaves linear. 1. *L. albomarginatum.*
Basal leaves lanceolate; lower stem-leaves long-acuminate from an ovate base. 2. *L. utahense.*
Scales between the stamens present, fringed or cleft.
Flowers creamy white; plant glabrous. 3. *L. montanum.*
Flowers blue.
Plant puberulent; inflorescence dense; interstaminal scales lanceolate. 4. *L. albicaule.*
Plant glabrous; inflorescence more open; interstaminal scales obovate or orbicular. 5. *L. coeruleum.*

11. TESSARÁNTHIUM Kellogg. Deer's Tongue.

Corolla-lobes 18–22 mm. long, usually exceeded by the long sepals.
Plant glabrous; inflorescence simple with verticillate pedicels; basal leaves over 1 dm. wide. 1. *T. macrophyllum.*
Plant puberulent; inflorescence compound; some branches simple, others again branched; basal leaves about 5 cm. wide. 2. *T. scabrum.*
Corolla-lobes about 15 mm. long or less; inflorescence compound.
Sepals narrowly linear, usually much exceeding the petals. 3. *T. stenosepalum.*
Sepals linear-lanceolate or subulate, scarcely equalling the petals.
Stem-leaves oblanceolate. 4. *T. speciosum.*
Stem-leaves linear-lanceolate. 5. *T. angustifolium.*

12. TETRAGONÁNTHUS J. F. Gmel. Spurred Gentian. 1. *T. deflexus.*

Family 104. MENYANTHACEAE. Buckbean Family.

1. MENYÁNTHES (Tourn.) L. Buckbean, Marsh Trefoil, Bog-bean. 1. *M. trifoliata.*

Family 105. APOCYNACEAE. Dogbane Family.

Anthers unappendaged at the base, not connected with the stigma; flowers without a disk; leaves alternate. 1. Amsonia.
Anthers appendaged at the base, converging around and coherent to the stigma; calyx-tube partly attached to the gynoecium by means of a thick disk; leaves opposite. 2. Apocynum.

1. AMSÒNIA (Clayt.) Walt.

Plant glabrous or nearly so.
Sepals lanceolate, short-acuminate, a little more than 1 mm. long; pod not torulose. 1. *A. latifolia.*
Sepals subulate, long-attenuate, 2–4 mm. long; pod more or less torulose or constricted around the seeds.

Leaves ovate or those of the branches lanceolate. 2. *A. brevifolia.*
Leaves narrowly lanceolate, those of the branches linear. 3. *A. Eastwoodiana.*
Plant densely villous. 4. *A. tomentosa.*

2. APÓCYNUM (Tourn.) L. Dogbane, Indian Hemp.

Corolla fully twice as long as the calyx; its lobes spreading in anthesis.
Leaves more or less pubescent beneath.
Sepals broadly lanceolate; corolla open campanulate; leaves thick, dark green, decidedly pubescent beneath.
Leaves oval, acute at both ends; plant usually tall. 1. *A. androsemaefolium.*
Leaves more or less ovate, rounded, truncate, or cordate at the base; plant low, diffuse.
Leaves rounded, rarely truncate at the base; stem and branches glabrous. 2. *A. scopulorum.*
Leaves subcordate or at least truncate at the base; stem and branches mostly pubescent. 3. *A. pumilum.*
Sepals narrowly lanceolate; corolla narrower, almost cylindro-campanulate; leaves pale green, pubescent merely on the petioles and the veins beneath, the lower truncate, the upper acute at the base. 4. *A. lividum.*
Leaves perfectly glabrous.
Leaf-blades lanceolate or rarely ovate, pale; corolla almost white, narrowly campanulate. 5. *A. convallarium.*
Leaves broadly or rounded ovate, thicker and dark green; corolla rose-colored, open campanulate.
Sepals acute; corolla 5–6 mm. long. 6. *A. ambigens.*
Sepals acuminate; corolla 7–9 mm. long. 7. *A. macranthum.*
Corolla less than twice as long as the calyx; its lobes erect or nearly so.
Leaves acute at the base, petioled. 8. *A. cannabinum.*
Leaves, at least those of the main stem, truncate or subcordate at the base and subsessile. 9. *A. sibiricum.*

Family 106. ASCLEPIADACEAE. Milkweed Family.

Crowns wanting; corolla urceolate or campanulate; stem twining. 1. Astephanus.
Crowns present; corolla rotate or open-campanulate.
Crowns double, the outer of a shallow undulate ring; plants twining. 2. Philibertella.
Crowns simple; plants erect or decumbent, not twining.
Corolla-lobes reflexed during anthesis.
Hoods of the crown crestless or with an obscure crest within. 3. Acerates.
Hoods of the crown with a horn-like or tooth-like crest within. 4. Asclepias.
Corolla-lobes erect-spreading during anthesis. 5. Asclepiodora.

1. ASTÉPHANUS R. Br.

1. *A. utahensis.*

2. PHILIBERTÉLLA Vail.

Crowns separate by a short column; stem glabrous. 1. *P. cynanchoides.*
Crowns contiguous; stem puberulent or pubescent. 2. *P. heterophylla*

3. ACERÀTES Ell. Green Milkweed.

Auricles of the hoods when present, concealed within; leaves oval to linear.
Umbel solitary, terminal; plant hirsute. 1. *A. lanuginosa.*
Umbels several, lateral; plant glabrate or tomentose when young. 2. *A. viridiflora.*
Auricles of the hoods conspicuously spreading; umbels lateral; leaves narrowly linear.
Hoods emarginate or truncate at the summit, crestless within; umbels distinctly peduncled. 3. *A. auriculata.*
Hoods trilobed at the summit, with an internal crest-like midrib terminating in the middle lobe; umbels subsessile or on very short peduncles. 4. *A. angustifolia.*

4. ASCLÈPIAS (Tourn.) L. Milkweed, Silkweed, Butterfly-weed.

Plant more or less hirsute; hoods orange; leaves mostly alternate; juice not milky. 1. *A. tuberosa.*
Plant not hirsute; hoods greenish, purplish, yellowish, or white; leaves mostly opposite or verticillate; juice milky.
Leaves orbicular to linear-lanceolate, opposite (except No. 14).
Follicles with soft spinulose processes, tomentose; leaves large and broad, tomentose, transversely veined, oval or ovate.
Hoods oblong-ovate, obtuse, slightly exceeding the stamens. 2. *A. syriaca.*
Hoods lanceolate, produced, about three times as long as the stamens. 3. *A. speciosa.*
Follicles without processes.
Flowers very large; petals over 1 cm. long; column none; corolla spherical in outline; horns included in the hoods; leaves almost orbicular, sub-cordate at the base. 4. *A. cryptoceras.*
Flowers middle-sized or small; petals much less than 1 cm. long; column usually present and horns exserted.

Leaves broadly oval or rectangular-oval or nearly orbicular, obtuse or retuse at both ends; umbels sessile.
Plant puberulent when young, glabrate in age; column very short. 5. *A. latifolia.*
Plant tomentulose; column half as long as the anthers. 6. *A. arenaria.*
Leaves ovate or lanceolate, or rarely oval, acute.
Leaves ovate or ovate-lanceolate, more or less tomentose, at least when young.
Hoods truncate, slightly longer than the anthers; leaves sessile, with rounded or subcordate bases. 7. *A. erosa.*
Hoods ovate-oblong to lanceolate, much exceeding the stamens; leaves petioled.
Corolla yellowish; hoods with a tooth on each margin, not auricled or gibbous at the base; peduncles shorter than the pedicels. 8. *A. ovalifolia.*
Corolla purple; hoods without teeth; peduncles longer than the pedicels.
Hoods not auricled or gibbous at the base; leaves permanently tomentose, at least beneath. 9. *A. curvipes.*
Hoods with two gibbosities at the base; leaves puberulent when young, glabrous in age. 10. *A. Hallii.*
Leaves linear-lanceolate; hoods truncate, little if at all longer than the anthers.
Column short; leaves pale.
Plant more or less tomentose or puberulent, at least when young.
Hoods shorter than the anthers; corolla purple; leaves in age glabrate or nearly so.
Hoods about half as long as the anthers; umbels peduncled. 11. *A. brachystephana.*
Hoods only slightly shorter than the anthers; umbel subsessile. 12. *A. uncinalis.*
Hoods longer than the anthers; corolla purplish outside, green within; leaves permanently tomentose. 13. *A. macrosperma.*
Plant glabrous; corolla greenish white; hoods white. 14. *A. labriformis.*
Column more than half as long as the anthers; corolla purple. 15. *A. incarnata.*
Leaves narrowly linear, verticillate or scattered.
Corolla usually ash-colored; leaves 4–8 mm. wide. 16. *A. mexicana.*
Corolla greenish and white; leaves 1–3 mm. wide.
Plant tall, 4–6 dm. high, from a rootstock; leaves verticillate.
Hoods entire. 17. *A. verticillata.*
Hoods dorsally hastate-sagittate. 18. *A. galioides.*
Plant low, 1–2 dm. high, bushy, from a ligneous base; leaves scattered, crowded. 19. *A. pumila.*

5. ASCLEPIÓDORA A. Gray. Spider Milkweed. 1. *A. decumbens.*

Family 107. CONVOLVULACEAE. Morning-glory Family.

Styles distinct or partly so.
Corolla not plaited; styles simple. 1. Cressa.
Corolla plaited; styles 2-cleft. 2. Evolvulus.
Styles united up to the stigmas.
Stigmas subglobose. 3. Ipomoea.
Stigmas linear to oblong-cylindric. 4. Convolvulus.

1. CRÉSSA L.

Stem erect; pedicels longer than the leaves. 1. *C. erecta.*
Stem decumbent; pedicels shorter than the leaves. 2. *C. depressa.*

2. EVÓLVULUS L.

1. *E. Nuttallianus.*

3. IPOMOÈA L. Morning-glory.

Plant bushy, not climbing; leaves linear. 1. *I. leptophylla.*
Plant climbing; leaf-blades cordate. 2. *I. purpurea.*

4. CONVÓLVULUS (Tourn.) L. Bindweed, Morning Glory.

Calyx not closely subtended by the bracts.
Plant not canescent; leaf-blades hastate, but otherwise entire.
Whole plant glabrous or nearly so. 1. *C. arvensis.*
Stem and lower surface of the leaves with scattered long hairs. 2. *C. ambigens.*
Plant more or less canescent; leaves usually lobed or dissected.
Main divisions of the leaf-blades ovate or oblong, obtuse, lobed; sepals auricled at the base. 3. *C. hermannioides.*

Main divisions of the leaf-blades linear, entire, the basal lobes usually deeply cleft; sepals not auricled. 4. *C. incanus.*
Calyx closely subtended and enclosed by the large bracts.
Plants climbing or trailing; bracts cordate.
Leaf-blades hastate; the basal lobes often sinuate-dentate, acute; stem and leaves glabrous or slightly hairy. 5. *C. americanus.*
Leaf-blades more sagittate; basal lobes rounded, entire; stem and leaves densely pubescent. 6. *C. interior.*
Plants erect or decumbent; bracts oval or oblong. 7. *C. Macounii.*

Family 108. **CUSCUTACEAE.** Dodder Family.

1. **CÚSCUTA** (Tourn.) L. Dodder, Love-vine, Coral-vine.

Stigmas elongate, linear; styles equal; capsule circumscissile.
Corolla globose-urceolate; scales inside the corolla crenate. 1. *C. gracilis.*
Corolla open-campanulate; scales inside the corolla deeply fringed.
Calyx-lobes obtuse. 2. *C. planiflora.*
Calyx-lobes acute. 3. *C. Anthemi.*
Stigmas capitate; styles usually unequal.
Capsule circumscissile; calyx and corolla-lobes acuminate; inflorescence umbel-like. 4. *C. umbellata.*
Capsule indehiscent or bursting irregularly.
Calyx gamosepalous, usually not bracted.
Capsule depressed-globose.
Lobes of the corolla triangular or lanceolate, acuminate or acute.
Calyx-lobes acute or acuminate; corolla-lobes erect or somewhat spreading, in fruit connivent; flowers pedicelled. 5. *C. californica.*
Calyx-lobes rounded; corolla-lobes strongly spreading with inflexed tips, flowers subsessile. 6. *C. arvensis.*
Lobes of the corolla oblong, very obtuse.
Corolla deeply campanulate, 4-merous, about 2 mm. wide; tube longer than the calyx. 7. *C. cephalanthi.*
Corolla open-campanulate, about 4 mm. wide; tube shorter than the calyx. 8. *C. plattensis.*
Capsule ovoid-globose, acute.
Corolla-lobes not incurved.
Lobes of the corolla and the calyx obtuse.
Flowers less than 2 mm. long; calyx-lobes very short, rounded and denticulate. 9. *C. denticulata.*
Flowers 2.5–3 mm. long; calyx-lobes ovate, not denticulate.
Scales incurved over the ovary; styles about half as long as the ovary or longer. 10. *C. Gronovii.*
Scales appressed to the corolla-tube; styles one-third to one-fourth as long as the ovary. 11. *C. curta.*
Lobes of the corolla and calyx acute. 12. *C. salina.*
Corolla-lobes incurved at the apex.
Capsule 4 mm. or less broad; inflorescence rather open. 13. *C. indecora.*
Capsule 5–6 mm. broad; inflorescence globular clusters. 14. *C. megalocarpa.*
Calyx of 5 almost distinct and overlapping sepals, subtended by 2 or more similar bracts. 15. *C. cuspidata.*

Family 109. **POLEMONIACEAE.** Phlox Family.

Calyx wholly herbaceous; leaves pinnately compound. 1. Polemonium.
Calyx more or less scarious between the lobes, or the lobes spinulose-tipped and pungent; leaves simple or pinnatifid, but not compound.
Calyx distinctly enlarging in fruit, not ruptured by the capsule. 2. Collomia.
Calyx soon ruptured by the fruit, or if not ruptured, slightly if at all enlarged in fruit and calyx-teeth spinescent.
Corolla strictly salver-shaped with a narrow throat.
Perennials, with leaves opposite; seeds not mucilaginous when wetted. 3. Phlox.
Annuals, with the floral leaves alternate; seeds mucilaginous when wetted. 4. Microsteris.
Corolla campanulate, funnelform, trumpet-shaped, or if somewhat salver-shaped, the throat open.
Anthers sagittate at the base; calyx-lobes and 3-5-cleft bracts densely woolly, pungent. 5. Welwitschia.
Anthers not sagittate; calyx-teeth and bracts usually not woolly, but if somewhat so, not pungent.
Corolla elongate, with a narrow tube and funnelform or spreading throat.
Calyx-teeth either unequal in size or spinulose-laciniate, or both; pungent-leaved annuals. 6. Navarretia.
Calyx-teeth neither unequal nor spinulose-laciniate; perennials or non-pungent annuals.
Calyx not at all scarious in the sinuses; mostly undershrubs, with pungent leaves. 7. Leptodactylon.

Calyx decidedly scarious in the sinuses.
Stem leafy; bracts not connate.
Leaves alternate; seeds mostly with spiracles; corolla with a long tube and a funnelform throat.
Lower segments of the leaves not changed into bristles: calyx-lobes not long-setose. 8. GILIA.
Lower segments of the leaves changed into bristles; calyx-lobes long-setose. 9. LANGLOISIA.
Leaves opposite; seeds without spiracles; corolla short salver-shaped or short funnelform. 10. LINANTHUS.
Stem without proper leaves, but with persistent connate cotyledons and connate bracts subtending the head-like flower-clusters. 11. GYMNOSTERIS.
Corolla rotate, or campanulate, with very short proper tube, and rather open.
Corolla campanulate or short-funnelform.
Leaves mostly opposite; flowers medium sized; corolla funnelform. 10. LINANTHUS.
Leaves alternate; corolla very small, campanulate. 12. TINTINABULUM.
Corolla rotate. 13. GILIASTRUM.

1. **POLEMÒNIUM** (Tourn.) L. JACOB'S LADDER, SKUNK-WEED.

Annuals; corolla almost rotate, shorter than the calyx. I. MICRANTHA.
Perennials; corolla longer than the calyx.
Corolla campanulate; filaments with pilose appendages at the base; inflorescence usually open; leaflets never verticillate.
Low, 1–3 dm. high, cespitose; basal leaves numerous and stem-leaves few. II. PULCHELLA.
Stem tall, leafy, usually solitary from the rootstock, 4–10 dm. high. III. CAERULEA.
Corolla funnelform to trumpet-shaped; filaments without appendages at the base; inflorescence dense, spiciform; leaflets (except in the first species) verticillate. IV. VISCOSA.

I. MICRANTHA.

One species. 1. *P. micranthum.*

II. PULCHELLA.

Stem and leaves viscid-pubescent, with long flat hairs; leaflets inclined to be ovate or ovate-lanceolate.
Corolla over 1 cm. long; plants light green; leaflets 1.5–2 cm. long. 2. *P. columbianum.*
Corolla less than 1 cm. long; plant dark green; leaflets 5–15 mm. long. 3. *P. delicatum.*
Stem and leaves viscid-puberulent, the latter often glabrate.
Inflorescence and leaflets crowded; sepals obtuse or rounded at the apex. 4. *P. parvifolium.*
Inflorescence and leaflets scarcely crowded; sepals acutish.
Stem-leaves 1–3; inflorescence open. 5. *P. pulcherrimum.*
Stem-leaves 3–5; inflorescence narrow. 6. *P. Haydeni.*

III. CAERULEA.

Upper leaflets decurrent and confluent; plants with a woody base.
Corolla straw-colored or white. 7. *P. albiflorum.*
Corolla purple.
Corolla 2 cm. high, or nearly so; leaves glabrous. 8. *P. Archibaldae.*
Corolla 8–15 mm. high; leaves pubescent.
Stem and inflorescence long-villous, scarcely at all viscid. 9. *P. molle.*
Stem and inflorescence short-hairy; the latter at least distinctly viscid.
Corolla over 12 mm. long; inflorescence conical or ovoid in outline; main peduncle usually exceeding the branches. 10. *P. robustum.*
Corolla less than 12 mm. long; inflorescence flat-topped; main peduncle exceeded in length by the branches. 11. *P. foliosissimum.*
Upper leaflets not confluent; plant with a creeping rootstock.
Flowers in a narrow thyrsus; leaflets usually less than 3 cm. long. 12. *P. occidentale.*
Flowers in an open corymbiform or paniculate inflorescence; leaflets 3–5 cm. long. 13. *P. intermedium.*

IV. VISCOSA.

Corolla purple.
Leaflets not verticillate. 14. *P. speciosum.*
Leaflets more or less verticillate.
Corolla 2 cm. long or less, campanulate-funnelform, with a rather broad tube.
Calyx densely viscid, but not conspicuously long-hairy. 15. *P. viscosum.*
Calyx conspicuously villous with long white viscid hairs. 16. *P. Grayanum.*
Corolla 2–3 cm. long, funnelform, with a narrow tube. 17. *P. confertum.*
Corolla yellow, ochroleucous, or greenish.
Corolla funnelform; stamens adnate to the middle of the corolla-tube. 18. *P. mellitum.*

Corolla almost tubular; stamens almost wholly adnate to the corolla-tube. 19. *P. Brandegei.*

2. COLLÒMIA Nutt.

Annuals.
Leaves entire, rarely denticulate.
Floral leaves dilated, much broader than the rest; stamens inserted at different heights.
Corolla 2 cm. or more long; calyx-lobes broadly triangular-lanceolate, obtusish. 1. *C. grandiflora.*
Corolla about 1 cm. long; calyx-lobes lanceolate, acute. 2. *C. linearis.*
Floral leaves like the stem-leaves, linear; stamens inserted at the same height.
Calyx-lobes triangular, merely acute. 3. *C. tenella.*
Calyx-lobes lanceolate, aristate-tipped. 4. *C. aristella.*
Leaves, at least the lower, pinnately divided; divisions again toothed. 5. *C. heterophylla.*
Perennials with a cespitose rootstock. 6. *C. debilis.*

3. PHLÓX L. Phlox.

Intercostal portion of the calyx not replicate.
Plants conspicuously cespitose, less than 1.5 dm. high.
Leaves beset with cobwebby hairs; plants densely pulvinate-cespitose. I. Canescentes.
Leaves not cobwebby, except sometimes slightly so at the base.
Leaves glabrous, or merely cobwebby at the base, not glandular. II. Multiflorae.
Leaves hispid-ciliate on the margin, usually with more or less glandular hairs.
Leaves linear to subulate, not with thickened margins. III. Caespitosae.
Leaves oblong or broadly linear, with more or less thickened and cartilaginous margins. IV. Albomarginatae.
Plants suffrutescent at the base, 3–10 dm. high. VI. Speciosae.
Intercostal portion of the calyx replicate. V. Longiflorae.

I. Canescentes.

Leaves ovate to lanceolate, densely arachnoid-lanate, mucronate-tipped, but scarcely acerose.
Leaves ovate, distinctly 4-ranked, imbricate; corolla-tube twice as long as the calyx. 1. *P. bryoides.*
Leaves appressed, not conspicuously 4-ranked; corolla-tube slightly if at all exceeding the calyx 2. *P. muscoides.*
Leaves subulate, acerose, sparsely arachnoid.
Corolla small; its limb 8–10 mm. wide.
Corolla-tube about twice as long as the calyx. 3. *P. canescens.*
Corolla-tube slightly if at all exceeding the calyx. 4. *P. Hoodii.*
Corolla middle-sized, its limb 10–15 mm. wide. 5. *P. andicola*

II. Multiflorae.

Plant not glandular.
Calyx more than 8 mm. long, its teeth longer than the tube.
Calyx and the bases of the leaves arachnoid-hairy. 5. *P. andicola.*
Calyx and stem finely villous or glabrous; leaves not arachnoid.
Calyx more than 1 cm. long; leaves flat, the margins not revolute; stem 5–10 cm. high. 6. *P. multiflora.*
Calyx less than 1 cm. long; leaves very narrow, with revolute margins.
Stem and calyx glabrous or nearly so. 7. *P. depressa.*
Stem and calyx decidedly villous. 8. *P. costata.*
Calyx less than 8 mm. long, its lobes much shorter than the tube.
Corolla-lobes 6–8 mm. long.
Leaves all subulate-filiform. 9. *P. scleranthifolia.*
Leaves of the stem broader, inclined to be linear-oblanceolate, those of the fascicles or branches subulate. 10. *P. diffusa.*
Corolla-lobes 4–5 mm. long. 11. *P. glabrata.*
Plant more or less glandular. 12. *P. Douglasii.*

III. Caespitosae.

Leaves less than 1 cm. long; plant densely pulvinate-cespitose; limb of corolla seldom over 1 cm. broad.
Leaves almost erect, appressed; corolla-limb about 8 mm. wide. 13. *P. condensata.*
Leaves ascending-spreading; corolla-limb about 10 mm. wide.
Leaves linear, flat; margins only slightly revolute. 14. *P. caespitosa.*
Leaves acerose-subulate; margins strongly revolute. 15. *P. rigida.*
Leaves more than 1 cm. long; plant cespitose, but not pulvinate; corolla-limb 12–20 mm. wide.
Leaves acerose-subulate; margins strongly revolute; corolla white. 12. *P. Douglasii.*
Leaves linear; margins scarcely revolute; corolla usually pinkish or purplish. 16. *P. Kelseyi.*

IV. Albomarginatae.

Plant cespitose, but not densely pulvinate, more than 3 cm. high; leaves oblong to broadly linear, 7–20 mm. long.

Leaves linear, 1–2 cm. long; margins not very thick; corolla-tube twice as long as the calyx; young stems white-angled. 16. *P. Kelseyi.*
Leaves oblong with very thick margins, 7–12 mm. long; corolla-tube not twice as long as the calyx; young stems not white-angled. 17. *P. alyssifolia.*
Plants densely pulvinate, less than 3 cm. high; leaves ovate-oblong, less than 5 mm long, with very thick margins.
Flowers peduncled; corolla-tube over 1 cm. long, more than twice as long as the densely glandular calyx. 18. *P. albomarginata.*
Flowers subsessile; corolla-tube less than 1 cm. long, not twice as long as the calyx. 19. *P. diapensioides.*

V. LONGIFOLIAE.

Plant glabrous or only the upper portion, peduncles, and calyces pubescent.
Plant glabrous throughout, or rarely with a few scattered hairs on the calyces and peduncles; calyx-teeth longer than the tube; leaves less than 2 mm. wide. 20. *P. linearifolia.*
Plant usually pubescent above, in one variety even glandular; calyx-teeth shorter than the tube; leaves over 2 mm. wide. 21. *P. longifolia.*
Plant pubescent throughout.
Plant densely grayish pubescent, not at all glandular, densely cespitose, with a thick woody caudex. 22. *P. austromontana.*
Plant glandular or viscid.
Corolla-tube glabrous.
Leaves 2–4 mm. wide.
Leaves long-attenuate, not thick; only upper portion glandular; corolla scarcely twice as long as the calyx. 21. *P. longifolia.*
Leaves obtusish or abruptly acute, thick and firm; corolla-tube fully twice as long as the calyx. 23. *P. Stansburyi.*
Leaves 1 mm. wide; corolla not twice as long as the calyx. 24. *P. viridis.*
Corolla-tube pubescent. 25. *P. gladiformis.*

VI. SPECIOSAE.

One species. 26. *P. speciosa.*

4. MICRÓSTERIS Greene.

Calyx-lobes much exceeding the tube in length; plant usually erect, simple below; corolla tube 1 mm. wide or more; limb 3–4 mm. wide. 1. *M. gracilis.*
Calyx-lobes not longer than the tube; plant low, diffusely branched from near the base; corolla-tube less than 1 mm. wide; limb 1–2.5 mm. wide.
Plant 1.5–2 dm. high; leaves except the lower ones lanceolate or linear-lanceolate, mostly acute; corolla-tube longer than the calyx. 2. *M. humilis.*
Plant less than 1 dm. high; leaves, except the basal ones, oblong or linear, obtuse, the basal ones spatulate; corolla-tube scarcely exceeding the calyx. 3. *M. micrantha.*

5. WELWÍTSCHIA Reichenb.

Corolla-lobes much shorter than the tube.
Plant erect; heads acute at the base; bracts ascending.
Bracts not dilated at the base. 1. *W. Wilcoxii.*
Bracts somewhat dilated at the base. 2. *W. filifolia.*
Plant diffuse; heads rounded at the base; bracts spreading. 3. *W. diffusa.*
Corolla-lobes scarcely shorter than the tube. 4. *W. floccosa.*

6. NAVARRÈTIA R. & P.

Corolla white; pericarp hyaline and indehiscent or irregularly bursting, closely adherent to the mucilaginous seeds.
Calyx and the bases of the floral leaves long-hairy; flowers nearly 1 cm. long. 1. *N. intertexta.*
Glabrate or strigose, long-hairy only in the sinuses of the calyx; flowers about 7 mm. long. 2. *N. minima.*
Corolla yellow; pericarp of the capsule firm, dehiscent. 3. *N. Breweri.*

7. LEPTODÁCTYLON Nutt.

Leaves alternate; stem woody throughout.
Plant pulvinate-cespitose; corolla 4-merous. 1. *L. caespitosum.*
Plant suffruticose, with erect branches; corolla 5-merous.
Leaves and their divisions ascending, straight.
Leaves 6–15 mm. long. 2. *L. pungens.*
Leaves thick, 2–5 mm. long. 3. *L. brevifolium.*
Leaves and their divisions spreading-recurved, stout. 4. *L. patens.*
Leaves opposite; stem woody only at the base.
Leaves decidedly pungent; ovules numerous. 5. *L. Watsonii.*
Leaves scarcely pungent; ovules 2–3 in each cell. 6. *L. Nuttallii.*

8. GÍLIA R. & P.

Flowers capitately or spicately glomerate.
Plant strigose or short-villous (nearly glabrous in *G. nuda*); flowers leafy-bracted.
Perennials; flowers in dense heads or spikes. I. CONGESTAE.
Annuals, repeatedly branched, with small clusters of flowers in the axils of the leaves, more capitate at the ends of the branches. II. PUMILAE.
Plants glabrous; flowers in long-peduncled heads, not leafy-bracted. III. CAPITATAE.

Flowers openly paniculate or thyrsoid-paniculate.

Leaves pinnately divided.
Corolla-tube over 1 cm. long; calyx-lobes lanceolate, attenuate and spine-tipped; biennials.
Inflorescence thyrsoid, narrow. IV. AGGREGATAE.
Inflorescence open and inclined to be flat-topped. V. LONGIFLORAE.
Corolla-tube less than 1 cm. long.
Stamens conspicuously exserted; corolla nearly salverform; biennials. VI. PINNATIFIDAE.
Stamens not exserted, or barely so; corolla with a more or less funnelform throat; annuals. VII. INCONSPICUAE.
Leaves entire or the lower ones toothed or lobed.
Leaves not filiform. VIII. LEPTOMERIAE.
Leaves or their divisions filiform; annuals. IX. MINUTIFLORAE.

I. CONGESTAE.

Leaves entire.
Plant 3–4 dm. high, suffruticose. 1. *G. frutescens.*
Plant 1–2 dm. high, cespitose.
Leaves filiform, not very fleshy; flowering stems slender, sparingly leafy. 2. *G. spergulifolia.*
Leaves short, fleshy, falcate; flowering stems very short and very leafy. 3. *G. crebrifolia.*
Leaves, at least some of them, pinnatifid.
Plant branched only at the base, or simple; stem or branches strict, with a single head-like or spike-like inflorescence.
Stamens inserted in the throat of the corolla.
Inflorescence spike-like, more or less interrupted; corolla greenish white, its lobes acute. 4. *G. spicata.*
Inflorescence head-like; corolla white, its lobes obtuse.
Corolla-lobes 3–4 mm. long.
Corolla-tube scarcely exserted. 5. *G. globularis.*
Corolla-tube decidedly exserted, about half longer than the calyx. 6. *G. cephaloidea.*
Corolla-lobes 2–2.5 mm. long. 7. *G. congesta.*
Stamens inserted in the middle of the corolla-tube. 8. *G. tridactyla.*
Plant branched above as well as at the base; inflorescence of several heads more or less corymbosely arranged.
Leaves glabrous; inflorescence glandular. 9. *G. nuda.*
Leaves and inflorescence crisp-hairy.
Corolla-lobes about 2 mm. long; calyx-teeth and bracts green, with very short spine-tips; branches straw-colored.
Segments of the leaves short, oblong, crowded, the leaves therefore apparently subdigitate. 10. *G. montana.*
Segments of the leaves linear, not crowded, the leaves therefore distinctly pinnatifid.
Branches erect, 1.5–3 dm. high; plant sparingly pubescent. 11. *G. Burleyana.*
Branches ascending, 0.5–1.5 dm. high; plant densely pubescent. 12. *G. iberidifolia.*
Corolla-lobes 4–5 mm. long; calyx-teeth and bract rose-tinged, with long spine-tips; stem tinged with purple. 13. *G. roseata.*

II. PUMILAE.

Leaves entire or merely toothed.
Leaves linear-filiform, entire. 14. *G. Gunnisonii.*
Leaves oblanceolate, some of them toothed. 15. *G. depressa.*
Leaves pinnatifid.
Divisions of the leaves linear-filiform; floral leaves similar; corolla twice as long as the calyx. 16. *G. pumila.*
Divisions of the leaves very short, oblong; floral leaves broader and shorter, more entire; tube of the corolla slightly exceeding the calyx. 17. *G. polycladon.*

III. CAPITATAE.

One species. 18. *G. capitata.*

IV. AGGREGATAE.

Corolla-lobes acute or acuminate; corolla usually scarlet or pink.
Calyx only slightly scarious at the angles; its lobes lanceolate-attenuate, longer than the tube.
Calyx and inflorescence glandular-puberulent, not long-hairy.
Stamens included.
Corolla-lobes ovate-lanceolate, acute; tube about 2 cm. long. 19. *G. arizonica.*
Corolla-lobes narrowly lanceolate, attenuate; tube nearly 3 cm. long. 20. *G. tenuituba.*
Stamens exserted; corolla-lobes attenuate. 21. *G. aggregata.*
Calyx and usually also the inflorescence with long white flat hairs, as well as glandular-puberulent. 22. *G. pulchella.*
Calyx very scarious at the angles; its teeth shorter than the tube; corolla-lobes acute. 23. *G. scariosa.*
Corolla-lobes rounded or obtuse at the apex; corolla white. 24. *G. candida.*

V. LONGIFLORAE.

Corolla-tube 3–4 cm. long; its lobes obtuse. 25. *G. longiflora.*
Corolla-tube 1.5–2.5 cm. long; its lobes acute. 26. *G. laxiflora.*

VI. PINNATIFIDAE.

Divisions of the leaves all linear-filiform, not wider than the rachis; corolla about 1 cm. long. 27. *G. polyantha.*
Divisions, at least of the lower leaves, obovate or oblong, much broader than the rachis.
Corolla-tube 4–6 mm. long; calyx-lobes acuminate. 28. *G. calcarea.*
Corolla-tube 8–10 mm. long; calyx-lobes acute. 29. *G. MacVickerae.*

VII. INCONSPICUAE.

Corolla 7–14 mm. long.
Calyx about one-fourth as long as the corolla. 30. *G. scopulorum.*
Calyx one-third to two-thirds as long as the corolla.
Corolla-tube distinctly exserted from the calyx; leaves mostly basal or the stem-leaves reduced.
Plants branched near the base; the few stem-leaves pinnatifid.
Limb of the corolla 5–6 mm. wide; calyx glandular-puberulent. 31. *G. hutchinsifolia.*
Limb of the corolla 3–4 mm. wide; calyx glabrous or nearly so. 32. *G. sinuata.*
Plants simple below, branched above; stem-leaves several, lanceolate, sharply toothed or rarely entire. 33. *G. straminea.*
Corolla-tube scarcely exserted from the calyx; plant more leafy. 34. *G. inconspicua.*
Corolla 4–6 mm. long.
Plant leafy only at the base; divisions short and broad; corolla about twice as long as the calyx. 35. *G. subacaulis.*
Plants leafy throughout; divisions of the leaves narrow; corolla only slightly exceeding the calyx.
Leaves pinnatifid, with linear or oblong divisions. 36. *G. Tweedyi.*
Lower leaves sometimes pinnatifid, with filiform divisions, otherwise the leaves filiform and entire. 47. *G. minutiflora.*

VIII. LEPTOMERIAE.

Stamens exserted; inflorescence narrow and spike-like; leaves pinnately lobed. 37. *G. stenothyrsa.*
Stamens not exserted; inflorescence an open panicle.
Basal leaves toothed or lobed; annuals, biennials, or short-lived perennials.
Flowers 1 cm. long or more.
Plant densely glandular; stem-leaves oblanceolate, usually toothed; corolla scarlet or orange. 38. *G. subnuda.*
Plant nearly glabrous; upper stem-leaves lanceolate-subulate, entire; corolla rose-colored.
Calyx 5 mm. long; corolla 15 mm. long. 39. *G. Crandallii.*
Calyx 3 mm. long; corolla 10 mm. long. 40. *G. Haydeni.*
Flowers less than 1 cm. long; annuals.
Leaf-blades lanceolate, sinuately lobed; lobes scarcely spinulose-tipped. 41. *G. leptomeria.*
Leaf-blades orbicular or obovate, spinescent-toothed. 42. *G. latifolia.*
Basal leaves oblanceolate, entire; perennials.
Basal leaves 4–5 cm. long. 43. *G. pentstemonoides.*
Basal leaves 1 cm. long.
Corolla about 5 mm. long; plant simple. 44. *G. sedifolia.*
Corolla about 10 mm. long; plant cespitose. 45. *G. caespitosa.*

IX. MINUTIFLORAE.

Tall plants with strict branches and erect pedicels.
Pedicels longer than the fruiting calyces; branches ascending; capsule with 2 seeds in each cell; corolla 5 mm. long. 46. *G. sinistra.*
Pedicels usually shorter than the fruiting calyces; branches nearly erect; capsule 1-seeded; corolla 3–4 mm. long. 47. *G. minutiflora.*
Low delicate plants with spreading branches; pedicels in fruit reflexed. 48. *G. tenerrima.*

9. LANGLOÏSIA Greene.

Corolla almost regular and stamens nearly straight. 1. *L. setosissima.*
Corolla bilabiate and the stamens declined, curved. 2. *L. Schottii.*

10. LINÁNTHUS Benth.

Corolla short salver-shaped or campanulate.
Calyx 7–8 mm. long; corolla 10–15 mm. long; stamens inserted in the middle of the tube. 1. *L. Bigelovii.*
Calyx 4 mm. long; corolla 6–7 mm. long; stamens inserted near the base of the tube. 2. *L. Dactylophyllum.*
Corolla with a funnelform throat and short tube.
Corolla more than twice as long as the hirsute or strigose calyx. 3. *L. pharnaceoides.*
Corolla about half longer than the glabrous calyx. 4. *L. Harknessii.*

11. GYMNÓSTERIS Greene.

Lobes of the corolla 3–4 mm. long, truncate, undulate at the apex. 1. *G. nudicaulis.*
Lobes of the corolla 1–1.5 mm. long, acutish. 2. *G. parvula.*

12. TINTINÁBULUM Rydb. 1. *T. filiforme.*

13. GILIÁSTRUM (A. Brand) Rydb. 1. *G. acerosum.*

Family 110. **HYDROPHYLLACEAE.** Waterleaf Family.

Corolla-lobes convolute in bud; placentae dilated.
- Stamens exserted; calyx without appendages; leaves alternate. 1. Hydrophyllum.
- Stamens included.
  - Calyx without appendages; leaves opposite.
    - Seeds inserted only on the inner face of the placentae, globose, alveolate; calyx enlarged in fruit. 2. Macrocalyx.
    - Seeds inserted on both faces of the placentae, oblong or vermiform, rugose; calyx not enlarged in fruit. 3. Eucrypta.
  - Calyx with appendages in the sinuses, not much enlarged in fruit; leaves alternate or opposite. 4. Nemophila.

Corolla-lobes imbricate in bud; placentae not dilated.
- Styles more or less united; stamens mostly equal.
  - Styles free at the apex.
    - Flowers in circinate racemes, or solitary in the axils of the stem-leaves.
      - Calyx-lobes in two series, the outer 3 large and cordate. 13. Tricardia.
      - Calyx-lobes in one series, similar or nearly so.
        - Corolla deciduous, mostly purplish, bluish, or white.
          - Flowers in circinate racemes. 5. Phacelia.
          - Flowers solitary in the axils of stem-leaves. 12. Conanthus.
        - Corolla persistent, marcescent, yellowish.
          - Capsule ovoid, turgid; flowers not drooping. 6. Miltitzia.
          - Capsule compressed; flowers drooping. 7. Emmenanthe.
    - Flowers solitary, from the axils of basal leaves. 8. Capnorea.
  - Styles united to the apex; flowers racemose, but hardly circinate. 9. Romanzoffia.
- Styles free to the base; stamens unequal.
  - Capsule coriaceous; shrubs. 10. Eriodictyon.
  - Capsule membranous; herbs. 11. Marilaunidium.

1. **HYDROPHÝLLUM** (Tourn.) L. Water-leaf.

Peduncles shorter than the petioles and mostly shorter than the flower-cluster; anthers oblong.
- Flowers capitate-cymose; corolla 7–8 mm. high. 1. *H. capitatum.*
- Flowers distinctly pediceled; corolla 5–6 mm. high. 2. *H. alpestre.*

Peduncles longer than the petioles; anthers oblong-linear.
- Leaf-segments 7–19.
  - Divisions of the leaves acuminate.
    - Stem and leaves sparingly hirsute or glabrous; sepals about equalling the corolla. 3. *H. Fendleri.*
    - Upper part of the stem and lower surface of the leaves densely pubescent; sepals much shorter than the corolla. 4. *H. albifrons.*
  - Divisions of the leaves acute, mucronate.
    - Leaves hispid beneath; inflorescence dense, subcapitate. 5. *H. occidentale.*
    - Leaves canescent beneath; inflorescence more open. 6. *H. Watsoni.*
- Leaf-segments 3–5. 7. *H. virginianum.*

2. **MACROCÀLYX** Trew. 1. *M. Nyctelea.*

3. **EUCRÝPTA** Nutt.

Seeds cylindric, transversely rugose and tubercled. 1. *E. micrantha.*
Seeds oblong or oval, deeply favose. 2. *E. pinetorum.*

3. **NEMÓPHILA** Nutt. Baby-blue-eyes.

Corolla 12–18 mm. long. 1. *N. Kirtleyi.*
Corolla 2–3 mm. long.
- Appendages of the corolla present.
  - Appendages of the corolla narrow, acuminate; seeds deeply pitted. 2. *N. inconspicua.*
  - Appendages of the corolla broad, cuneate; seeds smooth. 3. *N. breviflora.*
- Appendages of the corolla wanting. 4. *N. explicata.*

5. **PHACÈLIA** Juss. Scorpion Weed.

Stamens equalling or usually much exceeding the corolla.
- Leaves all simple and entire, or some of the lower pinnately 3–5-divided, with entire divisions; capsule acute; ovules 4. I. Heterophyllae.
- Leaves from sinuate-crenate to twice pinnatifid.
  - Plant annual or in one species perhaps perennial, but not cespitose.
    - Capsule globular-ovoid, obtuse; ovules 4; stamens in most species long-exserted.
      - Calyx-lobes oblong-spatulate to linear-oblanceolate, scarcely exceeding the capsule. II. Glandulosae.
      - Calyx-lobes linear to linear-oblanceolate, much exceeding the capsule. III. Ramosissimae.

Capsules ovoid, acute; ovules 12–40; stamens slightly if at all exceeding the corolla. IV. LINEARES.
Plant perennial, cespitose; inflorescence spicate-thyrsiform. V. SERICEAE.
Stamens shorter than the corolla; plant low and diffuse; annuals.
Seeds reticulate or favose-pitted, not transversely rugose; leaves long-petioled, entire or crenately lobed. VI. PULCHELLAE.
Seeds strongly corrugated transversely; leaves pinnately divided. VII. BICOLORES.

I. HETEROPHYLLAE.

Plant perennial, or at least biennial.
Plant densely canescent.
Calyx-lobes linear or linear-oblong; midveins inconspicuous; corolla pink or pale lilac, about 6 mm. long. 1. *P. leucophylla.*
Calyx-lobes narrowly linear; midveins, at least in fruit, very strong; corolla white. 4–5 mm. long. 2. *P. Burkei.*
Plant not densely canescent.
Pubescence of the leaves of two kinds, long hirsute hairs and a fine pilose or tomentose pubescence.
Calyx almost as long as the white corolla, its lobes narrowly linear, acute, with a strong midrib. 3. *P. nervosa.*
Calyx much shorter than the corolla; midveins faint.
Stem erect; calyx from two-thirds to three-fourths as long as the corolla.
Plant biennial or short-lived perennial; corolla pink or lilac. 4. *P. biennis.*
Plant a cespitose perennial; corolla usually white. 5. *P. heterophylla.*
Stem ascending, slender; inflorescence open; calyx about half as long as the pilose purplish corolla. 6. *P. alpina.*
Pubescence of the leaves hirsute only; calyx-lobes narrowly linear; midrib weak; corolla white. 7. *P. leptosepala.*
Plant annual.
Corolla 5–6 mm. long; ovules 4. 8. *P. humilis.*
Corolla 8–10 mm. long; ovules 12–16. 24. *P. linearis.*

II. GLANDULOSAE.

Corolla-lobes entire or merely sinuate-crenate.
Leaves sinuate-crenate to lobed halfways to the midrib.
Corolla narrowly campanulate; plant simple, strict, densely hirsute. 9. *P. Palmeri.*
Corolla open-campanulate; plant branched, scarcely at all hirsute, very glandular.
Stem-leaves suborbicular, subcordate at the base. 10. *P. orbicularis.*
Stem-leaves not suborbicular.
Stem-leaves ovate, oval, or elliptic in outline. 11. *P. integrifolia.*
Stem-leaves oblong in outline. 12. *P. corrugata.*
Leaves pinnately divided to the midrib.
Leaves densely hirsute or pilose, only slightly glandular; plant low, 1–2.5 dm. high, often naked above.
Leaves oblanceolate or spatulate in outline; calyx decidedly hirsute-hispid; stem and petioles glandular. 13. *P. crenulata.*
Leaves oblong or linear in outline; calyx scarcely hispid, but densely glandular; stem and petioles white-villous. 14. *P. deserta.*
Leaves hirsute only on the veins, short-pubescent and very viscid; plant stouter, 2–4 dm. high, branched.
Terminal divisions of the leaves large and obovate in outline. 15. *P. splendens.*
Terminal divisions of the leaves not much enlarged, ovate, lanceolate or oblong in outline. 16. *P. glandulosa.*
Corolla-lobes distinctly dentate or erose.
Corolla white; stamens about twice as long as the corolla. 17. *P. alba.*
Corolla purplish or pink.
Stamens slightly exceeding the corolla; corolla-lobes erose. 18. *P. neomexicana.*
Stamens included; corolla-lobes dentate. 19. *P. denticulata.*

III. RAMOSISSIMAE.

Leaves pinnatifid or bipinnatifid.
Calyx-lobes oblanceolate; segments of the leaves broad, obovate or oblong; plant diffusely branched. 20. *P. ramosissima.*
Calyx-lobes linear; segments of the leaves small, oblong; plant simple. 21. *P. hispida.*
Leaves round-lobed and coarsely crenate. 22. *P. Rattani.*

IV. LINEARES.

Leaves pinnately divided with numerous divisions, which are often toothed. 23. *P. Franklinii.*
Leaves entire or with 3–5 entire divisions. 24. *P. linearis.*

V. SERICEAE.

Stamens only slightly exceeding the corolla. 25. *P. idahoensis.*
Stamens at least twice as long as the corolla.
Leaves divided halfways to the midrib; stamens twice as long as the corolla. 26. *P. Lyallii.*

Leaves divided to near the midrib; stamens about three times as long as the corolla.
Plant equally sericeous throughout; segments of the leaves narrowly linear. 27. *P. sericea.*
Plant finely pubescent, hirsute-ciliate on the petioles; segments of the leaves oblong. 28. *P. ciliosa.*

VI. PULCHELLAE.

Flowers almost sessile in small dense sessile spikes; calyx equalling the corolla, or slightly shorter.
Leaves pinnatifid; calyx enlarging in fruit and strongly reticulate. 29. *P. firmomarginata.*
Leaves merely toothed or lobed; calyx neither much accrescent nor reticulate.
Leaf-blades spatulate.
Calyx-lobes subequal. 30. *P. cephalotes.*
Calyx-lobes unequal, the longer twice as long as the shorter. 31. *P. minutissima.*
Leaf-blades orbicular or rounded ovate. 32. *P. Knightii.*
Flowers pediceled in peduncled racemes; calyx much shorter than the corolla.
Leaf-blades entire or nearly so.
Leaf-blades orbicular or subreniform. 33. *P. demissa.*
Leaf-blades ovate, obovate, oval, or oblong.
Corolla about 1 cm. long; plant diffuse. 34. *P. pulchella.*
Corolla about 6 mm. long; plant erect.
Filaments sparsely pilose. 35. *P. curvipes.*
Filaments glabrous. 36. *P. incana.*
Leaf-blades round, sinuately toothed or crenate.
Corolla 8–10 mm. long; leaves glandular-puberulent. 37. *P. glechomaefolia*
Corolla 3–5 mm. long; leaves hirsutulous. 38. *P. rotundifolia.*

VII. BICOLORES.

Corolla white or pale purple, not much, if at all, exceeding the calyx.
Plant not glandular or scarcely so; leaves pinnatifid.
Corolla shorter than the calyx. 39. *P. campestris.*
Corolla usually slightly exceeding the calyx. 40. *P. Ivesiana.*
Plant decidedly glandular; leaves more or less bipinnatifid.
Calyx-lobes linear or nearly so, twice as long as the capsule. 41. *P. glandulifera.*
Calyx-lobes spatulate, scarcely half longer than the capsule. 42. *P. affinis.*
Corolla about twice as long as the calyx; throat yellow; limb purple.
Corolla broadly funnelform; leaves once pinnate. 43. *P. Fremontii.*
Corolla narrowly funnelform, nearly tubular; leaves twice pinnatifid. 44. *P. bicolor.*

6. MILTÍTZIA A.DC.

Leaf-blades lanceolate to oblong, obtuse, laciniate-dentate. 1. *M. foliosa.*
Leaf-blades obovate, spatulate or oval, coarsely round-toothed.
Peduncles usually longer than the leaves; corolla and capsule equalling the calyx. 2. *M. scopulina.*
Peduncles shorter than the leaves; corolla and capsule shorter than the calyx. 3. *M. salina.*

7. EMMENÁNTHE Benth. WHISPERING BELLS.

1. *E. pendulaeflora.*

8. CAPNÒREA Raf.

Corolla saucer-shaped or rotate.
Calyx almost glabrous, except the ciliate margins; leaves not distinctly venulose. 1. *C. pumila.*
Calyx long-villous at the base; leaves distinctly venulose. 2. *C. nervosa.*
Corolla campanulate or funnelform.
Calyx-lobes oblong or lanceolate, obtuse.
Corolla 12–15 mm. long; pubescence of the plant short. 3. *C. Watsoniana.*
Corolla 7–10 mm. long; pubescence longer on the peduncle; calyx densely villous. 4. *C. incana.*
Calyx-lobes linear or linear-lanceolate, acute. 5. *C. nana.*

9. ROMANZÓFFIA Cham.

Leaves 1.5–4.5 cm. broad.
Leaves 5–9-lobed; capsule longer than the calyx. 1. *R. sitchensis.*
Leaves 3–5-lobed; capsule not exceeding the calyx. 2. *R. Leibergii.*
Leaves less than 0.5 cm. broad. 3. *R. minima.*

10. ERIODÍCTYON Benth. MOUNTAIN BALM, YERBA SANTA.

1. *E. angustifolium.*

11. MARILAUNÍDIUM Kuntze.

Diffuse; corolla more than twice as long as the calyx. 1. *M. demissum.*
Erect; corolla shorter than the calyx. 2. *M. angustifolium.*

12. CONÁNTHUS S. Wats.

1. *C. aretioides.*

13. TRICÀRDIA Torr.

1. *T. Watsoni.*

Family 111. **EHRETIACEAE.** Ehretia Family.

Corolla not appendaged; stamens unequally inserted; nutlets rough-granulate, ventrally united. 1. Eddya.
Corolla appendaged; stamens equally inserted; nutlets smooth and shining, united only at the center. 2. Triquiliopsis.

1. ÉDDYA Torr. 1. *E. hispidissima.*

2. TIQUILIOPSIS (A. Gray) Heller.

Annual, canescent and hirsute; leaf-blades rhombic or rotund; corolla pink or white. 1. *T. Nuttallii.*
Perennial, often suffruticose at the base, merely canescent; leaf-blades obovate or ovate; corolla bluish. 2. *T. Palmeri.*

Family 112. **HELIOTROPACEAE.** Heliotrope Family.

Cone of the stigma not setose; flowers in terminal scorpioid spikes or racemes. 1. Heliotropium.
Cone of the stigma penicillate-setose; flowers axillary to leaf-like bracts. 2. Euploca.

1. HELIOTRÒPIUM L. Heliotrope. 1. *H. spathulatum.*

2. EÙPLOCA Nutt. 1. *E. convolvulacea.*

Family 113. **BORAGINACEAE.** Borage Family.

Nutlets with hooked prickles, at least on the margins.
  Nutlets spreading or divergent on the low receptacle.
    Nutlets elongate, flat, wing-margined, attached underneath the edge of the receptacle; prickles only on the margins; slender annuals.
      Nutlets divergent in pairs; margin laciniate or undulate. 1. Pectocarya.
      Nutlets equally radiately divergent, entire-margined. 2. Gruvelia.
    Nutlets short, not wing-margined, prickly all over, attached horizontally or obliquely on the receptacle; stout biennials or perennials. 3. Cynoglossum.
  Nutlets erect on the elevated receptacle, prickly on the margin, rarely along the back. 4. Lappula.
Nutlets unarmed, or if prickly the prickles not hooked.
  Receptacle conic or elongate; nutlets attached laterally.
    Calyx in fruit much enlarged, veiny-reticulate and folded. 5. Asperugo.
    Calyx in fruit neither much enlarged, nor conspicuously veiny.
      Corolla blue or white (yellowish only in a few species of *Oreocarya*), with fornicles in the throat (except in *Greeneocharis*, and obscurely so in *Eremocarya*); cotyledons entire.
        Nutlets attached below the middle, with an oblique truncate back, which is surrounded by an entire or toothed margin; low pulvinate-cespitose perennials. 6. Eritrichium.
        Nutlets attached at the middle or with an elongated scar reaching from the base to above the middle, not with a truncate, margined back; plants rarely pulvinate-cespitose.
          Pedicels and calyx persistent in fruit.
            Calyx circumscissile; plants dichotomously branched. 7. Greeneocharis.
            Calyx not circumscissile.
              Nutlets oblique or incurved, attached by a median false caruncle. 8. Plagiobothrys.
              Nutlets erect, the groove or scar of attachment naked.
                Plants dichotomously branched; racemes biserial; calyx cleft to the base. 9. Eremocarya.
                Plants not dichotomously branched; inflorescence racemiform or thyrsoid; its branches uniserial; calyx not cleft to the base.
                  Calyx-lobes spreading in fruit; leaves alternate.
                    Perennials, with bracted racemose or thyrsoid inflorescence. 10. Oreocarya.
                    Annuals, mostly with bractless racemose inflorescence. 12. Cryptantha.
                  Calyx nearly closed in fruit; leaves proper opposite, with connate bases; annuals. 11. Allocarya.
          Pedicels in fruit falling off with the calyx; the latter closed; branched but not dichotomous annuals. 12. Cryptantha.
      Corolla yellow or orange, often with naked throat; cotyledons 2-cleft. 13. Amsinckia.
  Receptacle flat or merely convex.
    Scar of the nutlets small and marginless.
      Nutlets obliquely attached; flowers mostly bractless; corolla blue or white, with funnelform throat. 14. Mertensia.
      Nutlets attached by the very base.
        Corolla salverform or funnelform, its lobes rounded and spreading.

Racemes not bracted; corolla in ours blue, its lobes convolute in the bud. 15. MYOSOTIS.
Racemes bracted; corolla yellow or yellowish, its lobes imbricated in the bud. 16. LITHOSPERMUM.
Corolla tubular, its lobes erect, acute, otherwise as in *Lithospermum*. 17. ONOSMODIUM.
Scar of the nutlets large and excavated, bordered by a prominent margin.
Fornices in the throat of the corolla short, blunt. 18. ANCHUSA.
Fornices long, linear or lanceolate. 19. SYMPHYTUM.

1. PECTOCÀRYA DC.

Nutlets linear or linear-oblong, their wings pectinately or laciniately toothed, each tooth ending in an uncinate prickle. 1. *P. linearis*.
Nutlets oblong, their wings not laciniate, sinuately lobed, uncinate-prickly usually only at the apex, sometimes with a few prickles on the sides. 2. *P. penicillata*.

2. GRUVÈLIA A. DC. 1. *G. setosa*.

3. CYNOGLÓSSUM (Tourn.) L. HOUND'S TONGUE.

Soft pubescent; lower leaf-blades oblong or spatulate; stem-leaves lanceolate; inflorescence many-flowered and leafy. 1. *C. officinale*.
Hispidulous; lower leaf-blades oval; stem-leaves oblong-ovate, clasping; inflorescence few-flowered and naked. 2. *C. boreale*.

4. LÁPPULA (Riv.) Moench. STICKSEED, BURSEED, STICK-TIGHTS, BEGGAR TICKS.

Inflorescence leafy-bracted only at the base; bracts minute above; gynobase short-pyramidal; scar of the nutlets ovate or triangular; perennials or biennials.
Marginal prickles free to the base or nearly so.
Corolla 1.5–3 mm. wide.
Leaves thin; stem-leaves lanceolate.
Fruit about 3 mm. wide; nutlets usually with a few prickles on the back. 1. *L. americana*.
Fruit about 5 mm. wide; nutlets merely muricate on the back. 2. *L. leptophylla*.
Leaves firmer; stem-leaves oblanceolate to linear; fruit about 3 mm. wide, not prickly on the back. 3. *L. Besseyi*.
Corolla 4–12 mm. wide; leaves firmer.
Fornices of the corolla glabrous or papillose.
Fornices broader than long; corolla blue.
Foliage rather softly pubescent; stem leafy throughout.
Corolla 4–6 mm. broad; nutlets without prickles on the back. 4. *L. floribunda*.
Corolla 8–10 mm. broad; nutlets with a few prickles on the back. 5. *L. diffusa*.
Foliage hirsute; hairs with pustulate bases; stem very leafy at the base, few-leaved above. 6. *L. gracilenta*.
Fornices as long as broad; corolla white; foliage harshly papillose-scabrous. 7. *L. trachyphylla*.
Fornices of the corolla pubescent; nutlets with about 10 prickles on the back.
Corolla tinged with blue; appendages long-hirsute. 8. *L. coerulescens*.
Corolla white; appendages pilose. 9. *L. subdecumbens*.
Marginal prickles united for one-third to one-half their length into a distinct wing.
Back of the nutlets strongly muricate and with prickles.
Corolla blue; pubescence fine, appressed. 10. *L. ciliata*.
Corolla white; pubescence hirsute. 11. *L. cinerea*.
Back of the nutlets without prickles, almost smooth.
Stem-leaves linear-lanceolate, densely strigose. 12. *L. angustata*.
Stem-leaves oblong-lanceolate, hispidulous, the hairs with papillose bases. 13. *L. scaberrima*.
Inflorescence leafy, the floral leaves, although smaller, resembling those of the stem; annuals.
The annular margin connecting the bases of the prickles inconspicuous in all four nutlets.
Marginal prickles in two rows.
Corolla almost 3 mm. wide; prickles shorter than the length of the fruit. 14. *L. erecta*.
Corolla less than 2 mm. wide; prickles nearly as long as the fruit.
Fruit 4–5 mm. long; sepals ovate-lanceolate, obtuse; floral leaves ample, ovate or oblong. 15. *L. cenchrusoides*.
Fruit 3–4 mm. long; sepals lanceolate or linear-lanceolate, acute; floral leaves much reduced, lanceolate. 16. *L. Fremontii*.
Marginal prickles in one row.
Calyx-lobes more than twice as long as the fruit, reflexed-spreading; floral leaves broadly lanceolate. 17. *L. calycosa*.
Calyx-lobes less than twice as long as the fruit; floral leaves linear or linear-lanceolate.
Dorsal faces of the nutlets inside the annular margin small; lower prickles inserted about one-third the distance from the base; stem strigose. 18. *L. montana*

Dorsal faces of the nutlets inside the ring large; lower prickles inserted near the base of the nutlets; stem hirsute.
Prickles terete; plant green; corolla blue. 19. *L. occidentalis.*
Prickles flattened and dilated at the base; plant whitish long-hairy below; corolla white. 20. *L. leucotricha.*
The annular margin connecting the bases of the prickles at least in three of the nutlets broadened and forming a cup.
Plant at flowering time with a large basal rosette of spatulate leaves; stems simple up to the inflorescence, softly pilose.
Stems several from the rosette, low, 1–2 dm. high; cup deep and much inflated. 21. *L. collina.*
Stems solitary, 3–4 dm. high; cup rather shallow and slightly gibbous. 22. *L. cupulata.*
Plant at flowering time without a basal rosette, diffusely branched, hirsute, green.
Cup deep, more or less saccate. 23. *L. heterosperma.*
Cup shallow, with revolute margins. 24. *L. foliosa.*

5. ASPERÙGO (Tourn.) L. Catchweed, German Madwort.

1. *A. procumbens.*

6. ERITRÍCHIUM Schrader.

Dorsal surface of the nutlets margined with a ridge-like ring, but not toothed.
Plant strigose; dorsal surface of the nutlets papillose-hispid; corolla 7–9 mm. wide. 1. *E. Howardii.*
Basal leaves with long loose pubescence; dorsal surface of the nutlets smooth; corolla 5–6 mm. wide. 2. *E. elongatum.*
Dorsal surface of the nutlets with a toothed border; corolla 4–6 mm. wide. 3. *E. argenteum.*

7. GREENEÓCHARIS Guerke & Harms.

1. *G. circumscissa.*

8. PLAGIOBÓTHRYS Fisch. & Mey. Popcorn Flower.

Receptacle subglobose or depressed, not 4-sulcate; nutlets only 1 or 2 maturing, horizontally incumbent; plants with tufted basal leaves.
Nutlets cruciform; basal leaves rosulate; cauline few and small. 1. *P. tenellus.*
Nutlets broadly ovate; stems leafy throughout. 2. *P. arizonicus.*
Receptacle deeply 4-sulcate, after the falling of the nutlets; nutlets all 4 maturing, incurved. 3. *P. Kingii.*

9. EREMOCÀRYA Greene.

Nutlets smooth and shining. 1. *E. micrantha.*
Nutlets finely muricate, dull. 2. *E. muricata.*

10. OREOCÀRYA Greene.

Corolla-tube not exserted.
Fruit depressed; nutlets smooth, at the margins separated by an open space; caulescent cespitose perennials.
Leaves canescent.
Nutlets all maturing.
Leaves appressed-canescent, not hispid; corolla 5–7 mm. wide. 1. *O. cinerea.*
Leaves with the fine pubescence intermixed with hispid hairs on the lower surface; corolla less than 5 mm. wide.
Plant low, grayish, not yellowish hispid above; racemes short, 2-ranked. 2. *O. suffruticosa.*
Plant tall, yellowish hispid above; racemes in fruit elongate, 1-ranked. 3. *O. multicaulis.*
Nutlets only one maturing, three abortive. 4. *O. disticha.*
Leaves green, having scattered short hairs with pustulate bases above, glabrous beneath. 5. *O. pustulosa.*
Fruit conical or ovoid; nutlets touching each other.
Floral leaves long, many times longer than the flower-clusters; inflorescence spike-like; biennials or short-lived perennials.
Nutlets transversely rugose. 6. *O. virgata.*
Nutlets smooth. 7. *O. spicata.*
Floral leaves comparatively short, little if at all surpassing the flower-clusters.
Nutlets rough.
Nutlets decidedly wing-margined.
Branches of the inflorescence appressed, erect, in fruit elongate; nutlets merely muricate on the back. 8. *O. setosissima.*
Branches of the inflorescence spreading; nutlets rugose as well as muricate on the back. 11. *O. virginensis.*
Nutlets acute-margined, not winged.
Calyx-lobes ovate-lanceolate, only slightly exceeding the mature nutlets; inflorescence paniculate, with rather few branches; caulescent perennials, often cespitose.
Corolla 7–8 mm. broad; nutlets muricate and cross-ribbed, but not honeycomb-crested. 9. *O. elata.*
Corolla 4–5 mm. broad; nutlets honeycomb-crested. 10. *O. Bakeri.*
Calyx-lobes lanceloate to linear, much exceeding the nutlets; inflorescence thyrsoid.

Inflorescence a broad, open, round-topped thyrsus; branches usually again branched.
Plant tall, 2 dm. high or more; nutlets with acute backs and sharply acute margins; tubercles united into more or less distinct cross-ridges; biennials, with taproots.
Nutlets wing-margined, with the strong, rather regular cross-ridges uniting on the back. 11. *O. virginensis.*
Nutlets merely acute-angled, weakly irregularly cross-ridged. 12. *O. thyrsiflora.*
Plant low, cespitose perennials, 1–2 dm. high; nutlets with rounded backs; murications united into star-shaped tubercles. 13. *O. aperta.*
Inflorescence, at least in flowers, narrow, almost spike-like, if more open, the branches simple.
Plants green, very hispid, only the basal leaves canescent; bristles with conspicuous pustulate bases, much longer than the short strigose or tomentose pubescence.
Leaves linear or narrowly linear-lanceolate; plant 1–2 dm. high, very slender. 14. *O. Macounii.*
Leaves, at least the basal ones, broadly oblanceolate or spatulate.
Corolla 7–10 mm. broad; nutlets ovate, more than half as broad as long.
Leaves obtuse; inflorescence dense.
Basal leaves broadly spatulate, usually canescent; stem 1–3 dm. high. 15. *O. glomerata.*
Basal leaves oblanceolate, greener; stem usually 3–4 dm. high. 16. *O. affinis.*
Leaves acute, strongly hirsute-ciliate; inflorescence not very dense 17. *O. spiculifera.*
Corolla 5–7 mm. broad; nutlets lanceolate, less than half as broad as long; basal leaves oblanceolate, somewhat canescent; plant 1–3 dm. high. 18. *O. perennis.*
Plant canescent; at least the basal leaves with inconspicuous bristles scarcely longer than the other pubescence.
Plant stout, 2–4 dm. high, rather simple; corolla 7–10 mm. broad. 19. *O. argentea.*
Plant low, less than 2 dm. high, densely cespitose.
Basal leaves narrowly linear-oblanceolate, glossy, closely appressed-canescent; nutlets mammillate-papillose. 20. *O. cana.*
Basal leaves spatulate, white or yellow, scarcely glossy, at least when mature.
Nutlets 1 or 2, acuminate with a blunt apex; calyx-lobes linear-subulate. 21. *O. nana.*
Nutlets 4, merely acute; calyx-lobes lanceolate.
Nutlets more or less rugulose; tubercles more or less confluent.
Inflorescence in fruit rather open; corolla-tube slightly exserted. 22. *O. echinoides.*
Inflorescence congested; corolla-tube not exserted.
Corolla 7–9 mm. broad. 23. *O. sericea.*
Corolla 4–6 mm. broad.
Leaves tomentose and hispid; nutlets tuberculose-rugulose. 24. *O. depressa.*
Leaves strigillose and hispid; nutlets sinuately and finely rugulose. 25. *O. caespitosa.*
Nutlets muricate.
Inflorescence narrow; plant not more than 1 dm. high.
Leaves strigillose and hispid. 26. *O. Shantzii.*
Leaves subtomentose and hispid. 27. *O. dolosa.*
Inflorescence open; plant 1–2 dm. high. 28. *O. commixta.*
Nutlets smooth. 29. *O. salmonensis.*
Corolla-tube long-exserted; cespitose perennial, rarely biennial.
Corolla white.
Nutlets rough.
Nutlets more or less distinctly rugose, with irregular cross-ridges, as well as muricate.
Fruit depressed-globose; nutlets incurved on the margins and separated by open spaces. 30. *O. paradoxa.*
Fruit ovoid-conic; nutlets touching.
Ridges of the nutlets honeycomb-crested; inflorescence narrow; leaves canescent and hispid. 31. *O. eulophus.*
Ridges of the nutlets neither much interlacing nor crested.

Inflorescence, at least in fruit, open, with elongate branches.
Corolla 15–18 mm. long; calyx enlarging and becoming 15–18 mm. long in fruit. 32. *O. longiflora.*
Corolla 12–15 mm. long; calyx scarcely enlarging, in fruit less than 1 cm. long. 33. *O. Wetherillii.*
Inflorescence narrow; stem slender.
Basal leaves spatulate.
Corolla 12–14 mm. long, much exceeding the calyx. 34. *O. cristata.*
Corolla slightly exceeding the calyx. 22. *O. echinoides.*
Basal leaves linear-oblanceolate; corolla slightly exceeding the calyx. 35. *O. tenuis.*
Nutlets finely muricate; at least the inflorescence with yellowish hairs.
Plant low, 1–2 dm. high; basal leaves 2–3 cm. long, 3–7 mm. wide.
Corolla about 1 cm. long, pure white; nutlets muricate on the back. 36. *O. fulvocanescens.*
Corolla 12–15 mm. long, often with a yellow eye; nutlets roughly papillose. 38. *O. flavoculata.*
Plant 2–3 dm. high; basal leaves 4–10 cm. long, 7–15 mm. wide. 37. *O. nitida.*
Nutlets smooth.
Fruit not depressed; stem-leaves linear or linear-lanceolate.
Stem-leaves linear; nutlets brownish, obtuse, slightly ridged on the back. 39. *O. flava.*
Stem-leaves linear-lanceolate; nutlets ivory-white, acute, flat on the back. 40. *O. leucophaea.*
Fruit depressed, acutely margined. 41. *O. alata.*
Corolla yellow, or with a yellow throat.
Basal leaves spatulate or oblanceolate; corolla usually white with yellow throat; nutlets papillose. 38. *O. flavoculata.*
Basal leaves narrowly linear-oblanceolate; corolla yellow; nutlets smooth. 39. *O. flava.*

11. **ALLOCÀRYA** Greene.

Racemes loose and leafy-bracted; corolla small, less than 2 mm. wide; nutlets more or less rugose.
Plant glabrous or nearly so. 1. *A. orthocarpa.*
Plant decidedly hairy.
Plant hirsute. 2. *A. hispidula.*
Plant strigose.
Calyx erect in fruit.
Bracts oblong, scarcely more than twice as long as the flowers; nutlets uncinate-bristly on the back. 3. *A. Nelsonii.*
Bracts (often lacking under some of the flowers) linear and resembling the leaves; nutlets merely rugose on the back. 4. *A. scopulorum.*
Calyx spreading in fruit; nutlets irregularly wrinkled on the back. 5. *A. cognata.*
Racemes bractless; flowers 7–8 mm. broad; nutlets not rugose. 6. *A. Hendersoni.*

12. **CRYPTÁNTHA** Lehm.

Nutlets not winged.
Nutlets all or some of them tuberculate or muricate.
Nutlets usually solitary. I. RECURVATAE.
Nutlets usually 4.
Nutlets dissimilar, 3 of them tubercled or muricate, the fourth smooth or nearly so. II. HETEROCARYAE.
Nutlets all alike and tubercled. III. MURICULATAE.
Nutlets all smooth.
Groove of the nutlets simple, continuous to the base. IV. LEIOCARPAE.
Groove two-forked at the base.
No open areola between the forks of the groove; nutlets acute. V. TORREYANAE.
A distinct open areola between the forks of the groove; nutlets lanceolate, acuminate. VI. RAMULOSISSIMAE.
Nutlets winged. VII. PTEROCARYAE.

I. RECURVATAE.

Calyx-lobes recurved. 1. *C. recurvata.*
Calyx-lobes not recurved. 5. *C. barbigera.*

II. HETEROCARYAE.

Sepals in fruit strongly thickened on the back. 2. *C. crassisepala.*
Sepals in fruit not strongly thickened on the back.
Plant 1–2 dm. high; calyx in fruit 6–8 mm. long. 3. *C. Kelseyana.*
Plant a few cm. high; calyx in fruit less than 5 mm. long. 4. *C. minima.*

III. MURICULATAE.

Pubescence of the stem at least in part consisting of spreading hairs.
Leaves broadly linear or oblanceolate; calyx in fruit over 5 mm. long.
Calyx densely pubescent with long white silky hairs and bristly on the midribs; nutlets tubercled even on the ventral side; groove open. 5. *C. barbigera.*
Calyx with appressed or ascending yellowish hairs, and with spreading bristles on the veins.
Nutlets smooth on the ventral side; groove closed. 6. *C. multicaulis.*

Nutlets narrowly conical with an open narrow groove, finely spinulose-muricate. 7. *C. scoparia.*
Leaves narrowly linear; calyx in fruit about 4 mm. long. 8. *C. ambigua.*
Pubescence on the stem appressed; leaves very narrowly linear: calyx white-silky. 9. *C. leptophylla.*

IV. LEIOCARPAE.

Mature nutlets solitary, subterete; stem strigose; leaves narrowly linear, almost filiform 10. *C. flaccida.*
Mature nutlets usually 4, angled on the ventral side; plants more or less hispid; leaves linear to oblanceolate.
Leaves narrowly linear or linear-lanceolate.
Fruiting calyx about 6 mm. long; nutlets attached only to the middle. 11. *C. affinis.*
Fruiting calyx 3–4 mm. long; nutlets attached their whole length. 12. *C. leiocarpa.*
Leaves wider, oblanceolate or oblong. 13. *C. confusa.*

V. TORREYANA.

Mature nutlet solitary. 14. *C. gracilis.*
Mature nutlets usually 4.
Nutlets broadly ovoid, attached by their lower half; fruiting calyx 4–7 mm. long.
Corolla-limb 5–6 mm. wide. 15. *C. grandiflora.*
Corolla-limb less than 2 mm. wide.
Calyx 4–5 mm. long; lobes not much thickened on the back. 16. *C. Torreyana.*
Calyx 6–7 mm. long; lobes much thickened on the back, usually spreading. 17. *C. calycosa.*
Nutlets lanceolate in outline, attached by their whole length. 18. *C. Watsoni.*

VI. RAMULOSISSIMAE.

Leaves spatulate or oblanceolate, or the upper sometimes linear. 19. *C. Pattersoni.*
Leaves narrowly linear.
Branches ascending; flowers not conspicuously unilateral. 20. *C. Fendleri.*
Branches divaricate, arcuate, and flowers conspicuously unilateral. 21. *C. ramulosissima.*

VII. PTEROCARYAE.

Fruiting calyx 4–5 mm. long; nutlets broadly ovate, with a broad erose or toothed wing. 22. *C. pterocarya.*
Fruiting calyx, 2–3 mm. long; nutlets lance-ovate, with a narrow, entire wing. 23. *C. utahensis.*

13. **AMSÍNCKIA** Lehm. FIDDLE NECK, BUCKTHORN-WEED.

Leaves all narrowly linear. 1. *A. retrorsa.*
Stem-leaves at least lanceolate to ovate.
Corolla about 5 mm. long. 2. *A. micrantha.*
Corolla 8–10 mm. long.
Nutlets with tubercles in more or less distinct rows, but not with tessellate ridges.
Fruiting calyx about 12 mm. long. 3. *A. idahoensis.*
Fruiting calyx about 8 mm. long.
Stem-leaves narrowly lanceolate; tubercles distinctly in rows. 4. *A. hispidissima.*
Stem-leaves broadly lanceolate; tubercles scarcely arranged in rows. 5. *A. Menziesii.*
Nutlets rugose, with tesselate ridges, interposed with smaller tubercles.
Stem-leaves narrowly lanceolate; inflorescence not leafy; sepals linear-lanceolate, free. 6. *A. rugosa.*
Stem-leaves broadly lanceolate or oblong; inflorescence leafy; sepals lanceolate, some often united. 7. *A. tessellata.*

14. **MERTÉNSIA** Roth. LUNGWORT, BLUEBELLS, LANGUID LADY.

Filaments equalling or exceeding, and usually broader than the anthers.
Calyx-lobes longer than the short tube, rarely slightly shorter.
Calyx-lobes linear or oblong, obtuse.
Stem 3–10 dm. high. I. CILIATAE.
Stem 2–3 dm. high. VIII. INCONGRUENTES.
Calyx-lobes triangular-lanceolate to linear-lanceolate, acute.
Tube of the corolla at least twice as long as the throat and limb. II. LONGIFLORAE.
Tube of the corolla only slightly if at all longer than the throat and limb.
Plant tall, usually more than 4 dm. high; leaves distinctly veined, in most feather-veined, but in a few triple-veined with anastomosing veins.
Stem, calyx-tube and lower surface of the leaves long-hairy. III. PANICULATAE.
Stem glabrous; calyx strigose or merely ciliate on the margins. IV. MEMBRANACEAE.
Plant low, usually less than 4 dm. high; leaves with a strong midrib, without distinct lateral veins (except sometimes the basal leaves, which then however are thick and firm). V. LANCEOLATAE.
Calyx-lobes rounded-ovate, much shorter than the ample, campanulate tube. VI. BRACHYLOBAE.
Anthers subsessile or on very short narrow filaments inserted in the tube or the throat of the corolla; low plants, 1–3 dm. high, of the habit of the LANCEOLATAE group. VII. ALPINAE.

I. CILIATAE.

Lower surface of the leaves decidedly pubescent. 1. *M. subpubescens.*
Lower surface of the leaves glabrous, except the ciliate margins.
Calyx-lobes oblong, 1.5–2 mm. long.
Stem-leaves, at least the upper ones, narrowly lanceolate; plant very pale; pedicels usually strigillose. 2. *M. pallida.*
Stem-leaves all ovate or broadly lanceolate; pedicels usually pustulate-muricate 3. *M. ciliata.*
Calyx-lobes linear, 3 mm. long, ciliate. 4. *M. platensis.*

II. LONGIFLORAE.

Plant with a tuberous-thickened root and mostly a single stem.
Leaves densely pubescent on both sides. 5. *M. eplicata.*
Leaves glabrous at least beneath.
Calyx-lobes linear-lanceolate, long-ciliate; pedicels strigose; leaves linear-oblong to oblong-lanceolate. 6. *M. oblongifolia.*
Calyx-lobes short-ciliate; pedicels glabrous or muriculate; leaves broader.
Corolla-tube twice as long as the limb and throat; leaves setulous-scabrous above. 7. *M. longiflora.*
Corolla-tube almost three times as long as the limb and throat; leaves merely papillose above. 8. *M. pulchella.*
Plant not tuberous-rooted, more or less cespitose.
Floral leaves oblong. 9. *M. nutans.*
Floral leaves ovate.
Pedicels scabrous-muricate; corolla-tube about three times as long as the limb and throat. 10. *M. tubiflora.*
Pedicels glabrous or minutely pustulate; corolla-tube about twice as long as the limb and throat. 11. *M. foliosa*

III. PANICULATAE.

Corolla about 1.5 cm. long; stem densely pubescent. 12. *M. pilosa.*
Corolla about 1 cm. long; stem sparingly pubescent.
Calyx-lobes lance-linear to lanceolate, acuminate. 13. *M. paniculata.*
Calyx-lobes oblong-lanceolate, acutish. 14. *M. loyabensis.*

IV. MEMBRANACEAE.

Pedicels hairy.
Corolla 1 cm. or less long.
Fruiting pedicels strongly reflexed. 15. *M. refracta.*
Fruiting pedicels ascending or nodding.
Corolla-tube over 4 mm. wide; calyx bristly-ciliate. 16. *M. cynoglossoides.*
Corolla-tube 2–3 mm. wide.
Calyx strigose; stem-leaves ovate. 17. *M. membranacea.*
Calyx only ciliate on the margins; leaves oblong-lanceolate or only the uppermost ovate.
Hairs of the pedicels not with pustulate bases.
Plant stout; pedicels bristly-hispid with spreading hairs. 18. *M. muriculata.*
Plant slender; pedicels strigose. 32. *M. viridis.*
Hairs of the pedicels very short, and with pustulate bases. 35. *M. coronata.*
Corolla about 1.5 cm. long. 19. *M. pratensis.*
Pedicels muricate-scabrous or smooth.
Calyx-lobes not longer than the fruit; leaves broadly ovate. 20. *M. brachycalyx.*
Calyx much exceeding the fruit; leaves oblong or lanceolate, or ovate in no. 23.
Calyx-lobes shorter than the calyx-tube, bristly ciliate. 21. *M. arizonica.*
Calyx-lobes longer than the calyx-tube.
Corolla about 15 mm. long; pedicels smooth or sparingly callous-pustulate.
Corolla-tube not shorter than the limb and throat.
Upper leaves at least three times as long as wide. 22. *M. intermedia*
Upper leaves not more than twice as long as wide. 23. *M. praecox.*
Corolla-tube shorter than the limb and throat. 24. *M. Leonardi.*
Corolla 10 mm. long; pedicels with small hispidulous hairs with pustulate bases. 35. *M. coronata.*

V. LANCEOLATAE.

Pedicels decidedly strigose or hirsute.
Stem from a fusiform root; leaves glabrous beneath. 25. *M. fusiformis*
Stem from a more or less woody caudex or rootstock.
Leaves pubescent on both sides; calyx usually densely pubescent all over.
Leaves linear or only the uppermost lanceolate. 26. *M. lateriflora*
Blades of the lower leaves ovate or spatulate.
Plant more or less grayish and densely strigose throughout. 27. *M. Bakeri.*
Plant green.
Pubescence short, on the stem sparse.
Calyx conspicuously pubescent. 28. *M. nivalis.*
Calyx glabrous except the ciliate margins. 29. *M. media.*
Pubescence longer and loose.
Calyx less than half as long as the corolla-tube. 30. *M. myosotifolia*
Calyx fully half as long as the corolla-tube. 31. *M. amoena.*
Leaves glabrous beneath; calyx usually glabrous, except the ciliate margins and sometimes the midrib.

Calyx-lobes ovate-lanceolate; inflorescence open. 32. *M. viridis.*
Calyx-lobes narrowly lanceolate; inflorescence dense.
Leaves narrowly linear. 33. *M. linearifloba.*
Leaves oblong-lanceolate to ovate.
Stem-leaves ovate to lance-ovate, finely strigose above; corolla-limb and throat decidedly shorter than the tube. 34. *M. ovata.*
Stem-leaves oblong-lanceolate; corolla-limb and throat nearly equalling the tube.
Leaf-blades scabrous-hispidulous or merely pustulate above; stem 2–4 dm. high. 35. *M. coronata.*
Leaf-blades hispidulous-strigose above; stem rarely more than 2 dm. high. 36. *M. Parryi.*
Pedicels and calyx glabrous, except the ciliate lobes of the latter.
Calyx-lobes ovate-lanceolate; upper stem-leaves ovate. 37. *M. Drummondii.*
Calyx-lobes narrowly lanceolate; stem-leaves linear or oblong.
Upper surface of the leaves short-pubescent. 38. *M. linearis.*
Upper surface of the leaves not hairy. 39. *M. lanceolata.*

VI. BRACHYLOBAE.

Calyx-lobes ciliate on the margins. 40. *M. brachyloba.*
Calyx-lobes not ciliate on the margins. 41. *M. campanulata.*

VII. ALPINAE.

Calyx ciliate on the margins; inflorescence narrow.
Leaves short-strigose above, glabrous beneath.
Corolla 7–9 mm. long; plant depressed, decumbent or ascending, 1–2 dm. high.
Calyx-lobes obtuse. 42. *M. alpina.*
Calyx-lobes acute. 43. *M. Tweedyi.*
Corolla more than 10 mm. long; stem about 3 dm. high. 44. *M. perplexa.*
Leaves merely pustulate-punctate above. 45. *M. humilis.*
Calyx villous all over.
Leaves oblong or oblanceolate, glabrous beneath; inflorescence open. 46. *M. brevistyla.*
Leaves linear, densely hairy on both sides; inflorescence narrow. 47. *M. cana.*

VIII. INCONGRUENTES.

One species. 48. *M. incongruens.*

15. MYOSÒTIS (Rupp.) L. FORGET-ME-NOT.

Perennials, tufted; corolla 4–6 mm. wide. 1. *M. alpestris.*
Annuals; corolla less than 2 mm. wide.
Stem tall, 3–5 dm. high; calyx nodding in fruit, 5–7 mm. long; nutlets about 2 mm. long. 2. *M. macrosperma.*
Stem lower, 1.5–3 dm. high; calyx not nodding in fruiting, less than 5 mm. long; nutlets about 1.5 mm. long. 3. *M. virginica.*

16. LITHOSPÉRMUM (Tourn.) L. GROMWELL, PUCCOON, INDIAN PAINT.

Annuals; nutlets dull, brownish, coarsely wrinkled and pitted. 1. *L. arvense.*
Perennials, with thick taproots; nutlets white and shining.
Corolla-lobes neither fimbriate nor toothed; flowers all well developed.
Corolla greenish or pale yellow, 1 cm. or less long; crest in the throat obsolete; plant very leafy, with the flowers mostly on the short branches.
Corolla-limb 3–5 mm. wide; tube not longer than the calyx; stem grayish strigose, but scarcely hispid. 2. *L. Torreyi.*
Corolla-limb 5–8 mm. wide; tube longer than the calyx.
Leaves linear or narrowly linear-lanceolate; stem very hispid; plant canescent. 3. *L. ruderale.*
Leaves lanceolate, long-attenuate; stem scarcely hispid; plant green. 4. *L. lanceolatum.*
Corolla bright yellow or orange, more than 1 cm. long; crest in the throat prominent.
Floral leaves of the later flowers small, shorter than the flowers; limb of the corolla 6–8 mm. wide. 5. *L. multiflorum.*
Floral leaves of the later flowers not reduced; limb of the corolla 8–20 mm. wide.
Hispid-pubescent; corolla-tube bearded at the base within. 6. *L. Gmelini.*
Canescent; corolla-tube not bearded at the base within. 7. *L. canescens.*
Corolla-lobes of the early flowers fimbriate or dentate; later flowers cleistogamous.
Corolla of the early flowers 2.5–3 cm. (rarely only 2 cm.) long; lobes distinctly fimbriate.
Plant hirsute. 8. *L. asperum.*
Plant appressed-canescent.
Leaves narrowly linear. 9. *L. linearifolium.*
Leaves spatulate to linear-oblong. 10. *L. oblongum.*
Corolla of the early flowers 2 cm. or less long; lobes dentate.
Corolla 15–20 mm. long; limb 8–10 mm. wide; stem low, ascending or decumbent. 11. *L. mandanense.*
Corolla 10 mm. or less long; limb 6–8 mm. wide; stem strict, 2–4 dm. high, mostly simple, or with erect branches. 12. *L. breviflorum.*

17. ONOSMÒDIUM Michx. False Gromwell. 1. *O. occidentale.*

18. ANCHÙSA L. Alkanet. 1. *A. officinalis.*

19. SYMPHÝTUM (Tour.) L. Comfrey. 1. *S. officinale.*

Family 114. **VERBENACEAE.** Vervain Family.

Corolla-limb 5-lobed; nutlets 4; flowers in terminal spikes. 1. Verbena.
Corolla 4-lobed; nutlets 2; flowers in short dense axillary spikes. 2. Phyla.

1. **VERBÈNA** (Tourn.) L. Vervain, Verbena.

Anthers not appendaged; flowers in elongate spikes, less than 8 mm. long.
Leaves not pinnatifid, sometimes merely lobed at the base in the first species; plant tall, erect, strict.
Bracts shorter than the calyx, or barely equalling it.
Spike peduncled; corolla-limb 3–6 mm. broad; pubescence sparse, coarse. 1. *V. hastata.*
Spike sessile; corolla-limb 8–9 mm. broad; pubescence dense, soft. 2. *V. stricta.*
Bracts one-third longer than the calyx; pubescence dense, soft. 3. *V. MacDougalii.*
Leaves more or less pinnatifid, at least incised; bracts much longer than the calyx.
Spike dense; nutlets muriculate on the commissural faces. 4. *V. bracteosa.*
Spike lax; nutlets nearly smooth on the commissural faces. 5. *V. remota.*
Anthers of the longer stamens appendaged by a gland on the connective; corolla 8 mm. long or more.
Calyx-lobes subulate or lance-subulate.
Leaves twice 3-parted into linear-oblong or lanceolate divisions. 6. *V. ciliata.*
Leaves once 3-parted, with toothed or slightly lobed divisions. 7. *V. Gooddingii.*
Calyx-lobes setaceous.
Bracts narrowly lanceolate, shorter than the calyx; leaf-segments oblanceolate. 8. *V. ambrosifolia.*
Bracts setaceous, longer than the calyx; leaf-segments linear. 9. *V. bipinnatifida.*

2. **PHÝLA** Lour.

Leaves from linear-oblanceolate to cuneate, 2–8-toothed above; peduncles slightly if any exceeding the leaves. 1. *P. cuneifolia.*
Leaves lanceolate, oblong, or oval, sharply serrate; peduncles much exceeding the leaves. 2. *P. lanceolata.*

Family 115. **LAMIACEAE.** Mint Family.

Ovary of 4 united nutlets; style not basal; nutlets laterally attached.
Corolla strongly bilateral, the upper lip very small, the lower large.
Flowers in small congested cymes, axillary to small bracts, and forming a raceme-like panicle; calyx-lobes shorter than the tube; leaves toothed. 1. Teucrium.
Flowers solitary in the axils of bracts similar to the leaves; calyx-lobes longer than the tube; leaves laciniate. 2. Melosmon.
Corolla almost regularly 5-lobed, but lobes declined; stamens long-exserted and coiled. 3. Trichostema.
Ovary of 4 distinct or nearly distinct nutlets; styles basal; nutlets basally attached.
Corolla bilabiate.
Calyx 2-lipped; both lips entire; stamens 4.
Calyx not inflated, the upper lip with a crest on the upper side. 4. Scutellaria.
Calyx inflated, without a crest. 5. Salazaria
Calyx either 2-lipped and at least one of the lips toothed, or regularly 4–5-toothed.
Stamens included in the corolla-tube. 6. Marrubium.
Stamens exserted from the tube.
Upper lip of the corolla concave.
Anther-bearing stamens 4.
Upper stamens longer than the lower.
Calyx 5-toothed.
Anther-sacs parallel or nearly so; stamens divergent. 7. Agastache.
Anther-sacs divaricate; anther approximate in pairs.
Flowers in terminal spikes; floral leaves reduced; plant erect. 8. Nepeta.
Flowers in axillary verticils; floral leaves like the rest; plant spreading. 9. Glecoma.
Calyx distinctly 2-lipped. 10. Moldavica.
Upper stamens shorter than the lower.
Calyx distinctly 2-lipped, closed in fruit. 11. Prunella.
Calyx 5-toothed, not 2-lipped, open in fruit.
Calyx membranous, inflated in fruit, faintly nerved. 12. Dracocephalum.
Calyx not membranous, not inflated in fruit, strongly 5–10-nerved.
Anther-sacs not transversely 2-valved.
Nutlets 3-sided, truncate above.

Calyx-teeth awn-pointed, spreading
13. LEONURUS.
Calyx-teeth not awn-pointed.
14. LAMIUM.
Nutlets ovoid, nearly terete, rounded above.
15. STACHYS.
Anther-sacs transversely 2-valved. 16. GALEOPSIS.
Anther-bearing stamens 2.
Connective of the anthers very long, articulated to the filaments, bearing a perfect anther at the ascending end and a reduced one or none at the other; calyx 2-lipped.
Upper lip of the corolla erect, entire or emarginate; lower portion of the connective either dilated and naked or with a small anther.
Inflorescence head-like; calyx-teeth aristate; lower portion of the connective anther-bearing. 17. PYCNOSPHACE.
Inflorescence raceme or spike-like; calyx-teeth not aristate; lower portion of the connective not anther-bearing.
18. SALVIA.
Upper lip of the corolla spreading, 2-lobed; lower portion of the connective a mere tooth or lacking; flowers verticillate-glomerate.
19. AUDIBERTELLA.
Connective of the anther short; anther-cells confluent; calyx equally 5-toothed.
20. MONARDA.
Upper lip of the corolla flat.
Stamens curved, often converging.
Calyx regularly 5-toothed.
Anther-bearing stamens 2.
21. POLIOMINTHA.
Anther-bearing stamens 4.
25. MICROMERIA.
Calyx 2-lipped or irregularly 5-toothed.
Anther-bearing stamens 2.
22. HEDEOMA.
Anther-bearing stamens 4.
23. CLINOPODIUM.
Stamens straight, distant and diverging; calyx almost regularly 5-toothed; anther-bearing stamens 4.
24. MADRONELLA.
Corolla nearly regular, 4–5-toothed.
Anther-bearing stamens 2.
26. LYCOPUS.
Anther-bearing stamens 4.
27. MENTHA.

1. TEÙCRIUM (Tourn.) L. GERMANDER, WOOD SAGE. 1. *T. occidentale*

2. MELÓSMON Raf. 1. *M. laciniatum.*

3. TRICHOSTÈMA L. BLUE CURLS. 1. *T. oblongum*

4. SCUTELLÀRIA L. SKULLCAP.

Flowers in axillary and terminal racemes. 1. *S. lateriflora*
Flowers solitary in the axils of the leaves.
Perennials, with horizontal rootstock.
Leaf-blades lanceolate or ovate, more or less distinctly toothed, at least the lower ones
Leaf-blades lanceolate, acute. 2. *S. galericulata.*
Leaf-blades ovate, obtuse. 6. *S. veronicifolia.*
Leaf-blades entire or nearly so, ovate, oblong or linear.
Corolla blue or violet; nutlets not raised on a gynobase.
Pedicels shorter than the calyx; calyx and corolla villous outside; lower lip of the latter glabrous within. 3. *S. Brittoni.*
Pedicels not shorter than the calyx; calyx and corolla densely short-pubescent; lower lip of the latter bearded within.
Corolla 12–18 mm. long; leaves elliptic, usually entire.
4. *S. antirrhinoides*
Corolla 18–30 mm. long.
Leaves linear or oblong, entire; corolla-tube slender, gradually widening upward. 5. *S. angustifolia.*
Lower leaves ovate, usually toothed; corolla-tube ample, abruptly widening upwards. 6. *S. veronicifolia.*
Corolla yellow; nutlets raised on a gynobase. 7. *S. Footeana*
Perennials, with a woody caudex. 8. *S. resinosa.*

5. SALAZÀRIA Torr. BLADDER SKULLCAP, BLADDER BUSH. 1. *S. mexicana*

6. MARRÙBIUM (Tourn.) L. HOREHOUND. 1. *M. vulgare*

7. AGÁSTACHE Clayton. GIANT HYSSOP.

Calyx-lobes ovate-lanceolate, acute.
Leaves glaucous beneath; calyx tinged with blue; stem glabrous. 1. *A. anethiodora*
Leaves not glaucous beneath; calyx green, yellowish, or rarely pinkish; stem puberulent. 2. *A. pallidiflora*
Calyx-lobes elongate-lanceolate, acuminate, rose-tinged. 3. *A. urticifolia*

8. NÉPETA L. CATNIP, CAT MINT. 1. *N. Cataria.*

9. GLECÒMA L. GROUND IVY, GILL-OVER-THE-GROUND. 1. *G. hederacea*

10. **MOLDÀVICA** (Tourn.) Adans. Dragon's Head. 1. *M. parviflora.*

11. **PRUNÉLLA** L. Self-heal, Heal-all, Carpenter Weed. 1. *P. vulgaris.*

12. **DRACOCÉPHALUM** (Tourn.) L. False Dragon-head. 1. *D. Nuttallii.*

13. **LEONÙRUS** L. Motherwort. 1. *L. Cardiaca.*

14. **LÀMIUM** L. Dead Nettle, Henbit. 1. *L. amplexicaule.*

15. **STÀCHYS** (Tourn.) L. Hedge Nettle.

Leaves and the angles of the stem coarsely hispid. 1. *S. asperrima.*
Leaves and stem softly pubescent.
Lateral lobes of the lower corolla-lip large, half as broad and three-fourths as long as the middle one. 2. *S. ampla.*
Lateral lobes of the lower corolla-lip small, scarcely half as long as the middle one
Stem glabrous below; leaves short-pubescent or glabrate. 3. *S. Leibergii.*
Stem pubescent throughout; leaves loosely villous.
Leaves oblong-ovate or cordate; corolla 12–15 mm. long; calyx lobes almost equalling the calyx-tube. 4. *S. teucriformis.*
Leaves oblong-lanceolate; corolla 10–12 mm. long; calyx-lobes decidedly shorter than the calyx-tube. 5. *S. scopulorum.*

16. **GALEÓPSIS** L. Hemp Nettle. 1. *G. Tetrahit.*

17. **PYCNOSPHÀCE** (Benth.) Rydb. Thistle Sage, Chia. 1. *P. Columbariae.*

18. **SÁLVIA** (Tourn.) L. Sage.

Corolla 15–30 mm. long; tube exserted. 1. *S. Pitcheri.*
Corolla 8–12 mm. long; tube included in the calyx. 2. *S. lanceolata.*

19. **AUDIBERTÉLLA** Briq. Ball Sage.

Leaf-blades oblong-spatulate; lower lip of the corolla much longer than the upper. 1. *A. incana.*
Leaf-blades rounded obovate-spatulate; lower lip of the corolla slightly longer than the upper. 2. *A. argentea.*

20. **MONÁRDA** L. Horse Mint, Wild Bergamot, Lemon Mint.

Heads solitary at the ends of the stem and branches; stamens conspicuously exceeding the acute upper lip of the corolla.
Petioles and stem more or less hirsute-villous, the latter especially so under the nodes.
Leaves sparingly pilose: stem and petioles hirsute-ciliate. 1. *M. comata.*
Leaves softly pubescent, especially below; stem, petioles, and the veins of the leaves lanate. 2. *M. Ramaleyi.*
Whole plant finely strigose or puberulent.
Petioles seldom over 5 mm. long.
Leaf-blades ovate-cordate; plant pale, more or less cinereous. 3. *M. menthaefolia.*
Leaf-blades lanceolate, with rounded or truncate base; plant green. 4. *M. stricta.*
Petioles 1–3 cm. long. 5. *M. mollis.*
Heads or verticillate glomerules several in the upper axils of the leaves; stamens scarcely exceeding the emarginate or cleft upper lip of the corolla. 6. *M. pectinata.*

21. **POLIOMÍNTHA** A. Gray. 1. *P. incana.*

22. **HEDEÒMA** Pers. Mock Pennyroyal.

Calyx-teeth about equal in length; bracts spreading or reflexed, hispid-ciliate. 1. *H. hispida.*
Calyx-teeth of the lower lip much longer than those of the upper; bracts mostly erect, cinereous-hispidulous.
Corolla 10–12 mm. long, more than half longer than the calyx. 2. *H. camporum.*
Corolla 6–8 mm. long, slightly exceeding the calyx.
Floral leaves longer than the subtended calyces; plant 1.5–4 dm. high. 3. *H. sancta*
Floral leaves scarcely exceeding the subtended calyces; plant 1–1.5 dm. high.
Leaf-blades oval or elliptic, distinctly petioled. 4. *H. thymoides*
Blades of the floral leaves oblong to linear. 5. *H. ovata.*

23. **CLINOPÒDIUM** L. Basil. 1. *C. vulgare.*

24. **MADRONÉLLA** Greene. False Horse-mint, Western Pennyroyal, Mustang Mint.

Bracts thin and pale, oval to orbicular; leaves usually entire.
Leaves tomentulose, especially beneath. 1. *M. odoratissima.*
Leaves sparingly and minutely puberulent or glabrous.
Calyces and bracts 8–12 mm. long.
Stem stout; leaves subsessile, ovate. 2. *M. sessilifolia.*
Stems slender; leaves distinctly petioled, oblong. 3. *M. oblongifolia*
Calyces and bracts about 6 mm. long. 4. *M. parvifolia.*

Bracts thick, resembling the leaves, lanceolate or ovate-lanceolate, obtuse: leaves usually dentate. 5. *M. dentata.*

25. MICROMÈRIA Benth. Tea-vine, Yerba Buena. 1. *M. Chamissonis.*

24. LÝCOPUS (Tourn.) L. Water Horehound, Bugle Weed.

Calyx-teeth ovate, obtusish, shorter than the nutlets. 1. *L. communis.*
Calyx-teeth lanceolate or subulate, acute or acuminate, longer than the nutlets.
Stem and lower surface of the leaves densely and finely pubescent, the former often velvety. 2. *L. velutinus.*
Stem sparingly and coarsely pubescent or glabrous; leaves glabrous or nearly so.
Leaves merely coarsely serrate.
Leaves tapering at the base, rather thin. 3. *L. lucidus.*
Leaves rounded at the base, thicker. 4. *L. asper.*
Leaves sinuately pinnatifid. 5. *L. americanus.*

26. MÉNTHA (Tourn.) L. Mint, Spearmint, Peppermint.

Whorls of flowers forming terminal spikes. 1. *M. spicata.*
Whorls of flowers all axillary.
Stem and petioles densely pubescent with long villous hairs; leaves decidedly pubescent. 2. *M. lanata.*
Stem and petioles retrorsely strigose or crisp-hairy with short hairs, or glabrous below; leaves sparingly puberulent or glabrous.
Corolla 5–6 mm. long, open-funnelform; bracts lanceolate or linear-lanceolate, usually exceeding the flower-clusters; leaves dark green, not strongly veined. 3. *M. occidentalis.*
Corolla 4–5 mm. long, salver-shaped-funnelform: bracts linear or subulate, shorter than the flower-clusters.
Leaf-blades thin, dark green, not strongly veined, tapering gradually into slender petioles, which equal or exceed the flower-clusters. 4. *M. glabrior.*
Leaf-blades thick, strongly veined, abruptly contracted into short petioles, which are much shorter than the flower-clusters.
Plant pale green, stout, 4–8 dm. high; calyx-teeth much longer than broad. 5. *M. Penardi.*
Plant usually purplish, low, 2–4 dm. high; calyx-teeth scarcely longer than broad. 6. *M. rubella.*

Family 116. **SOLANACEAE.** Potato Family.

Fruit a berry.
Corolla plicate; lobes usually induplicate; all our species herbs or vines.
Calyx inflated and bladder-like in fruit.
Corolla open-campanulate, yellow or whitish, often with a darker center; seeds finely pitted; flowers nodding in anthesis. 1. Physalis.
Corolla rotate, violet or purple; seeds rugose-tuberculate; flowers erect in anthesis. 2. Quincula.
Calyx not bladder-like inflated in fruit.
Calyx closely investing the berry.
Stamens alike, not inclined; low unarmed perennials. 3. Chamaesaracha.
Stamens dissimilar, declined; prickly annuals. 4. Androcera.
Calyx not inclosing the berry.
Anthers short, opening by a terminal pore or short slit. 5. Solanum.
Anthers long, tapering to the summit, opening longitudinally. 6. Lycopersicon.
Corolla little if at all plicate; its lobes valvate; shrubs. 7. Lycium.
Fruit a capsule.
Capsule circumscissile near the top, which separates as a lid; corolla irregular. 8. Hyoscyamus.
Capsule opening by valves; corolla regular.
Capsule prickly; seeds flat. 9. Datura.
Capsule not prickly; seeds scarcely flattened. 10. Nicotiana.

1. PHYSÁLIS L. Ground Cherry, Strawberry Tomato, Tomatillo.

Annuals, with branching roots; fruiting calyx cordate-ovoid, acuminate, strongly 5-angled.
Leaves very oblique, cordate, sinuate-dentate; fruiting calyx ovoid. 1. *P. pruinosa.*
Leaves orbicular or broadly ovate, sinuately crenate, scarcely cordate and scarcely oblique at the base. 2. *P. neomexicana.*
Perennials, with horizontal rootstocks or rarely with woody caudices.
Pubescence if any not stellate, although in *P. pumila* with some branched hairs.
Leaves and stem glabrous or the veins of the former and the upper part of the latter with scattered appressed hairs.
Leaves ovate, ovate-lanceolate, or oval. 3. *P. subglabrata.*
Leaves lanceolate, oblanceolate, or linear. 4. *P. longifolia.*
Leaves and stem more or less pubescent with spreading hairs.
Pubescence sparse, consisting of flat, sometimes jointed hairs, scarcely viscid.
Fruiting calyx ovoid, scarcely angled and scarcely sunken at the base; leaves thick, oblanceolate or spatulate to rhombic, subentire.
Leaves oblanceolate or spatulate; hairs all simple.

Pubescence very short; leaves narrowly oblanceolate. 5. *P. polyphytia.*
Pubescence long; leaves spatulate. 6. *P. lanceolata.*
Leaves broader, often rhombic; hairs on the lower surface branched. 7. *P. pumila.*
Fruiting calyx pyramidal-ovoid, obtusely 5-angled and deeply sunken at the base; leaves ovate to lanceolate, generally more or less toothed. 8. *P. virginiana.*
Pubescence dense, viscid, partly of fine and short, partly of long flat, jointed hairs.
Leaves large; blades over 5 cm. long, more or less cordate; long flat hairs numerous. 9. *P. heterophylla.*
Leaves smaller; blades less than 5 cm. long; long flat hairs few, mostly confined to the calyx.
Plant erect or ascending.
Leaf-blades reniform or rounded-cordate, coarsely-sinuately toothed. 10. *P. hederaefolia.*
Leaf-blades rounded-ovate or rhombic. 11. *P. comata.*
Plant prostrate, diffuse; leaf-blades nearly orbicular. 12. *P. rotundata.*
Pubescence fine, grayish, at least in part stellate. 13. *P. Fendleri.*

2. QUÍNCULA Raf. 1. *Q. lobata.*

3. CHAMAESÀRACHA A. Gray.

Pubescence dense, hirsute as well as puberulent. 1. *C. conioides.*
Pubescence sparse, puberulent or stellate, hirsute if at all only on the calyx. 2. *C. Coronopus.*

4. ANDRÓSERA Nutt. BUFFALO BUR. 1. *A. rostrata.*

5. SOLÀNUM (Tourn.) L. NIGHTSHADE, BITTERSWEET, POTATO, HORSE NETTLE.

Annuals.
Leaves pinnatifid. 1. *S. triflorum.*
Leaves sinuately dentate or entire.
Plant strigose or glabrous; berry black.
Leaves glabrous or nearly so; sepals very obtuse. 2. *S. nigrum.*
Leaves decidedly strigose beneath; sepals abruptly acutish.
Corolla-lobes 3–4 mm. long. 3. *S. interius.*
Corolla-lobes 6–8 mm. long. 4. *S. Douglasii.*
Plant more or less viscid-villous; berry greenish or yellowish. 5. *S. villosum.*
Perennials.
Plant green, glabrous or pubescent, but not stellate, never prickly.
Low plants with tuber-bearing rootstocks; leaves pinnately divided into 5–7 divisions. 6. *S. Jamesii.*
Tall plants, more or less woody below, not tuberiferous; leaves simple or pinnately 3-lobed.
Plant climbing; berry ellipsoid. 7. *S. Dulcamara.*
Plant not climbing; berry globose. 4. *S. Douglasii.*
Plant with stellate hairs; stem often prickly.
Leaves silvery-white, oblong to linear. 8. *S. elaeagnifolium.*
Leaves green, ovate, sinuately toothed. 9. *S. carolinense.*

6. LYCOPÉRSICON Mill. TOMATO, LOVE APPLE. 1. *L. Lycopersicum.*

7. LÝCIUM L. MATRIMONY VINE.

Fruit red, globose; corolla narrowly funnelform, yellow or greenish.
Flowers 2 cm. long. 1. *L. pallidum.*
Flowers about 1 cm. long.
Leaves and calyces puberulent, the latter about half as long as the corollas. 2. *L. Cooperi.*
Leaves and calyces glabrous (except the margin), the latter less than one-third as long as the corollas.
Calyx nearly one-third as long as the corolla, its lobes lanceolate or ovate-lanceolate; leaves 1–4 cm. long. 3. *L. Torreyi.*
Calyx less than one-fourth as long as the corolla, its lobes broadly triangular; leaves usually less than 1 cm. long. 4. *L. Andersonii.*
Fruit orange-red, oval; corolla short-funnelform, greenish purple. 5. *L. vulgare.*

8. HYOSCÝAMUS (Tourn.) L. HENBANE. 1. *H. niger.*

9. DATÙRA L. THORN APPLE, JIMSON WEED, JAMESTOWN WEED, STRAMONIUM.

Corolla 1.5–2 dm. long; capsule more or less fleshy, bursting irregularly. 1. *D. meteloides.*
Corolla about 1 dm. long; capsule dry, 4-valved.
Capsule erect; plant glabrous.
Corolla white; lower prickles of the capsule shorter. 2. *D. Stramonium.*

Corolla violet; prickles all alike. 3. *D. Tatula.*
Capsule nodding; plant more or less cinereous. 4. *D. discolor.*

10. **NICOTIÀNA** (Tourn.) L. Tobacco.

Corolla salverform; capsule 2-celled.
Leaves clasping at the base; flowers diurnal. 1. *N. trigonophylla.*
Leaves petioled, not clasping at the base; flowers nocturnal. 2. *N. attenuata.*
Corolla funnelform; capsule 4-celled; leaves acute at both ends. 3. *N. quadrivalvis.*

Family 117. **SCROPHULARIACEAE.** Figwort Family.

Anther-bearing stamens 5.
Corolla rotate. 1. Verbascum.
Corolla funnelform, 2-lipped. (Occasional forms of) 7. Pentstemon.
Anther-bearing stamens 4 or 2.
Corolla spurred, saccate or gibbous at the base on the lower side.
Corolla distinctly spurred at the base. 2. Linaria.
Corolla merely saccate or gibbous at the base. 3. Antirrhinum.
Corolla neither spurred, nor saccate, nor gibbous on the lower side.
Stamens 5, 4 anther-bearing; the fifth sterile and often rudimentary.
Sterile stamen rudimentary, represented by a scale or gland on the upper inside of the corolla-tube or throat; corolla short.
Corolla gibbous at the base on the upper side; ovules and seeds few or solitary; annuals.
Corolla deeply bilabiate, the middle lobe of the lower lip conduplicate and enclosing the stamens. 4. Collinsia.
Corolla obscurely bilabiate, its five lobes rotately spreading, the lowest not enclosing the stamens. 5. Tonella.
Corolla not gibbous at the base, but more or less ventricose especially on the lower side; ovules and seeds numerous; 4 upper lobes of the corolla erect, the lower spreading; perennials. 6. Scrophularia.
Sterile stamen elongate, filiform to spatulate; corolla-tube elongate, tubular or funnelform.
Inflorescence thyrsoid-paniculate; seeds not with an ariliform cellular-reticulate outer coat; corolla not gibbous at the base above; calyx deeply cleft. 7. Pentstemon.
Inflorescence racemose or spiciform; seeds with an ariliform cellular-reticulate outer coat.
Corolla gibbous at the base above; calyx divided to near the base; inflorescence racemose. 8. Pentstemonopsis.
Corolla not gibbous at the base above; calyx deeply tubular-funnelform, obtusely 5-lobed; inflorescence spicate. 9. Chionophila.
Stamens 4 or 2.
Upper lip or lobes external in the bud.
Anther-bearing stamens 4.
Corolla more or less bilabiate; sepals united into an angled tube; plants leafy-stemmed.
Style glabrous; stigma divided into 2 oval lobes; placentae remaining united in the middle, rarely separating. 10. Mimulus.
Style glandular above; stigma peltate-funnelform; placentae separating and remaining attached to the valves. 11. Eunanus.
Corolla nearly regular.
Calyx unequally 5-parted; flowers solitary in the axils of the leaves; plant caulescent. 12. Moniera.
Calyx regularly 5-lobed; flowers solitary on scape-like peduncles from the basal rosette of leaves; plant acaulescent. 13. Limosella.
Anther-bearing stamens 2; calyx of 5 almost distinct sepals; sterile filaments short or wanting. 14. Gratiola.
Upper lip or lobes internal in the bud.
Stamens 2.
Corolla almost regularly 4-lobed.
Corolla rotate; leaves opposite or verticillate. 15. Veronica.
Corolla campanulate or short-tubular; leaves alternate, mostly basal. 16. Synthyris.
Corolla none, or 2-lipped, cleft to near the base; upper lip entire, the lower irregularly cleft or toothed; basal leaves ample; stem-leaves bract-like, reduced and alternate. 17. Besseya.
Stamens 4.
Corolla slightly 2-lipped; stamens not ascending under the upper lip. 18. Agalinis.
Corolla distinctly 2-lipped; stamens ascending under the upper lip.
Anther-sacs dissimilar, the inner one pendulous by its apex; leaves mostly alternate.
Calyx gamosepalous.
Calyx deeply cleft in front and behind, less deeply so on the sides; upper lip of the corolla much longer than the 3-lobed lower one. 19. Castilleja
Calyx almost equally 4-cleft; upper lip of the corolla slightly if at all longer than the 1–3-saccate lower one, which is minutely or obsoletely toothed.

Lip 1-saccate. 20. ORTHOCARPUS.
Lip 3-saccate. 21. TRIPHYSARIA.
Calyx 2-phyllous, *i. e.*, cleft to the base on the sides or, by the absence of the lower leaf, 1-phyllous. 22. ADENOSTEGIA.
Anther-sacs alike, parallel; leaves mostly opposite.
Margins of the 2-lobed upper lip of the corolla recurved; calyx 4-cleft. 23. EUPHRASIA.
Margins of the upper lip of the corolla not recurved.
Ovules several or numerous; capsule several or many-seeded.
Calyx split below, or below and above, not inflated; capsule ovoid or oblong, oblique.
Galea prolonged into a filiform recurved beak; throat with a tooth on each side. 24. ELEPHANTELLA.
Galea if prolonged into a beak, the latter not filiform, straight or incurved; throat without teeth. 25. PEDICULARIS.
Calyx 4-toothed, inflated and veiny in fruit. 26. RHINANTHUS.
Ovules 2 in each cell; fruit 1–4-seeded. 27. MELAMPYRUM.

1. VERBÁSCUM (Tourn.) L. MULLEN.

Plant densely woolly; flowers in a dense spike. 1. *V. Thapsus.*
Plant glabrous or glandular; flowers racemose.
Pedicels longer than the fruit; plant glabrous or sparingly glandular. 2. *V. Blattaria.*
Pedicels shorter than the fruit; plant densely glandular. 3. *V. virgatum.*

2. LINÀRIA (Tourn.) L. BUTTER-AND-EGGS, TOAD-FLAX.

Corolla yellow, with an orange throat, 2–3 cm. long. 1. *L. Linaria.*
Corolla blue or white, 12 mm. or less long. 2. *L. texana.*

3. ANTIRRHÌNUM (Tourn.) L. SNAPDRAGON.

Stem erect, 1–4 dm. high, with very short straight pedicels. 1. *A. Kingii.*
Stem 6–12 dm. high, climbing by means of long filiform curved pedicels. 2. *A. Cooperi.*

4. COLLÍNSIA Nutt. BLUE-EYED MARY, BLUE-LIPS. 1. *C. parviflora.*

5. TONÉLLA Nutt. 1. *T. floribunda.*

6. SCROPHULÀRIA (Tourn.) L. FIGWORT.

Leaves simply serrate, none lobed at the base; corolla-tube barely twice as long as the calyx. 1. *S. serrata.*
Leaves incised or doubly serrate with sharp teeth, the lower inclined to be incised-lobed at the base; corolla-tube more than twice as long as the calyx. 2. *S. occidentalis.*

7. PENTSTÈMON (Mitchell) Schmidel. BEARD-TONGUE, MAYFLOWER, PRIDE-OF-THE-MOUNTAIN.

Corolla blue, purple, white, or yellowish, more or less funnelform or salverform.
Anthers bearded.
Plants suffrutescent; leaves leathery; anthers densely villous; sterile stamens usually glabrous. I. FRUTICOSI.
Plants not fruticose; leaves not leathery.
Plant more or less glandular at least in the rather few-flowered inflorescence; anthers densely villous; sterile stamen glabrous. II. MONTANI.
Plants glabrous or puberulent, not at all glandular; inflorescence dense and many-flowered; anthers and sterile stamens sparingly bearded. III. GLABRI.
Anthers glabrous or merely hirtello-ciliate along the line of dehiscence.
Anthers dehiscent for nearly their whole length or at least at their distal end.
Plants not suffruticose at the base.
Leaves not linear-filiform.
Corolla decidedly funnelform, *i. e.*, throat much wider than the tube.
Sterile stamen glabrous; plant tall. III. GLABRI.
Sterile stamen bearded.
Corolla over 3 cm. long, strongly ventricose; stem-leaves clasping.
Leaves strongly serrate. IV. PALMERIANI.
Leaves with entire margins. V. GRANDIFLORI.
Corolla about 2 cm. long or less; leaves linear or oblanceolate, not clasping; plant low.
Plants perfectly glabrous.
Corolla strongly ventricose-gibbous; tube proper very short. VI. HALLIANI.
Corolla not ventricose-gibbous; tube gradually dilated into a funnelform throat. VII. ACUMINATI.
Plants glandular at least on the inflorescence.
Stem-leaves distinctly petioled; blades broadly ovate or suborbicular, coarsely dentate. VIII. PETIOLATI.

Stem-leaves sessile or nearly so; blades linear to lanceolate or oblong.
Stem glabrous below. IX. Wippleani.
Stem glandular or puberulent. X. Cristati.
Corolla-tube almost cylindrical or slightly widening upwards; corolla less than 2 cm. long.
Stems several from a branching rootstock, low and weak. XI. Harbouriani.
Stems solitary or a few from a taproot or short caudex. XII. Conferti.
Leaves linear-filiform.
Corolla-limb not strongly oblique; sterile stamen bearded. XIII. Laricifolii.
Corolla-limb strongly oblique; sterile stamen glabrous. XIV. Ambigui.
Plant suffruticose at the base. XV. Caespitosi.
Anthers dehiscent only on their proximate half, the distal half of the cells saccate, remaining unopened.
Plants densely glandular-pubescent throughout. XVI. Glandulosi.
Plant glabrous or puberulent; if at all glandular only in the inflorescence. XVII. Azurei.
Corolla red, almost tubular.
Anthers opening nearly their whole length.
Corolla scarcely bilabiate; lower lip not reflexed. XVIII. Punicei.
Corolla strongly bilabiate; lower lip reflexed. XIX. Barbati.
Anthers opening only on their proximal part. XX. Bridgesiani.

I. Fruticosi.

Leaves more or less distinctly petioled, broadest at or above the middle, not long-acuminate.
Leaf-blades obovate or oval, obtuse or the upper acutish.
Plant 2–5 dm. high, erect. 1. *P. fruticosus.*
Plant depressed, less than 2 cm. high.
Corolla 3.5 cm. long; leaf-blades 1–3 cm. long. 2. *P. ellipticus.*
Corolla 2.5–3 cm. long; leaf-blades 1 cm. long or less. 3. *P. Menziesii.*
Leaf-blades oblanceolate, all acute.
Leaf-blades oblanceolate, entire or some rarely slightly denticulate; calyx-lobes lanceolate, 5–10 mm. long. 4. *P. crassifolius.*
Leaf-blades very narrowly oblanceolate, sharply dentate; calyx-lobes lance-subulate, 10–15 mm. long. 5. *P. Scouleri.*
Leaves sessile, long-attenuate, broadest at the base.
Leaves glabrous; calyx 10–12 mm. long; corolla 3.5–4 cm. long. 6. *P. Lyallii.*
Leaves grayish-pilose; calyx 12–15 mm. long; corolla 2.5–3.5 cm. long. 7. *P. linearifolius.*

II. Montani.

Leaves narrowly lanceolate; corolla 3.5–4 cm. long. 6. *P. Lyallii.*
Leaf-blades ovate or cordate to broadly oblong; corolla about 3 cm. long. 8. *P. montanus.*

III. Glabri.

Anthers bearded, with long villous hairs; inflorescence secund.
Corolla-tube decidedly shorter than the throat; corolla deep blue.
Calyx-lobes oval or ovate, acute or obtuse, glabrous. 9. *P. strictus.*
Calyx-lobes lanceolate, long-acuminate, minutely puberulent. 10. *P. strictiformis.*
Corolla-tube nearly as long as the throat; corolla pale blue. 11. *P. comarrhenus.*
Anthers not long-villous.
Anthers sparingly short-hirsute.
Calyx-lobes ovate or lanceolate, acuminate.
Stem-leaves all lanceolate.
Calyx-lobes with narrow scarious margins, not auriculate.
Corolla about 1.5 cm. long; limb almost regular; tube slightly ventricose; plant usually puberulent. 12. *P. Fremontii.*
Corolla 2 cm. long or longer; limb distinctly 2-lipped; plant glabrous.
Corolla about 2.5 cm. long; upper stem-leaves linear-lanceolate. 13. *P. subglaber.*
Corolla about 2 cm. long; upper stem-leaves broadly lanceolate to ovate. 14. *P. cyanocaulis.*
Calyx-lobes with very broad scarious margins, forming erose basal auricles. 15. *P. alpinus.*
Stem-leaves broadly ovate or subcordate.
Calyx-lobes with narrow or no scarious margins, not auriculate.
Leaves shorter than the internodes; anthers opening at the distal end. 16. *P. cyananthus.*
Leaves longer than the internodes; anthers opening their whole length. 14. *P. cyanocaulis.*
Calyx-lobes with very broad scarious margins, forming basal auricles; anther-sacs opening their whole length. 17. *P. Brandegei.*
Calyx-lobes orbicular or broadly ovate, abruptly short-acuminate, very scarious and erose. 18. *P. glaber.*
Anthers perfectly glabrous.
Sterile filament glabrous or nearly so.

Plant glabrate.
Calyx-lobes obovate or ovate, abruptly acuminate, decidedly scarious-margined. 19. *P. speciosus.*
Calyx-lobes acute or obtuse, scarcely scarious-margined. 20. *P. unilateralis.*
Plant densely puberulent. 21. *P. Wardii.*
Sterile filament strongly bearded. 22. *P. perpulcher.*

IV. PALMERIANI.

One species. 23. *P. Palmeri.*

V. GRANDIFLORI.

One species. 24. *P. grandiflorus.*

VI. HALLIANI.

One species. 25. *P. Hallii.*

VII. ACUMINATI.

Inflorescence interrupted; bracts except the lowermost shorter than the flowers; basal leaves spatulate or oblanceolate.
Stamens exserted; bracts rounded-cordate, abruptly short-acuminate; sepals ovate, scarious-margined. 26. *P. cyathophorus.*
Stamens included.
Bracts ovate or cordate.
Calyx-lobes ovate, with scarious toothed margins, abruptly acuminate; bracts ovate, acute. 27. *P. pachyphyllus.*
Calyx-lobes narrowly lanceolate, not scarious-margined.
Corolla-limb 15–18 mm. broad, glabrous within; tongue of the sterile filament strongly incurved, short yellow-bearded at the apex. 28. *P. acuminatus.*
Corolla-limb about 1 cm. broad, usually slightly bearded within; tongue of the sterile filament less strongly incurved, yellow-bearded its whole length. 29. *P. nitidus.*
Bracts lanceolate to linear-lanceolate.
Stem-leaves except the uppermost obtuse, oblong or oblanceolate, tapering into a winged petiole. 30. *P. arenicola*
Stem-leaves acute, sessile or the lowermost petioled, but the petiole not winged.
Calyx-lobes broadly obovate, scarious, erose, abruptly contracted into a very short acumination. 48. *P. Watsonii.*
Calyx-lobes ovate or lanceolate, acute or gradually acuminate.
Calyx-lobes lanceolate; plant 2.5–4 dm. high. 31. *P. secundiflorus.*
Calyx-lobes ovate, decidedly scarious-margined; plant 2 dm. or less high. 32. *P. Fendleri.*
Inflorescence dense; bracts large, long-acuminate, most of them exceeding the flowers, basal leaves linear or nearly so, narrower than the stem-leaves.
Bracts broadly lanceolate, or the upper ovate.
Bracts strongly veined; corolla 2.5–3 cm. long, ventricose; basal leaves linear. 33. *P. Haydenii.*
Bracts not strongly veined; corolla about 2 cm. long, scarcely ventricose; basal leaves linear-oblanceolate. 34. *P. caudatus.*
Bracts narrow, linear-lanceolate, not strongly veined. 35. *P. angustifolius.*

VIII. PETIOLATI.

One species. 36. *P. petiolotus.*

IX. WIPPLEANI.

One species. 37. *P. stenosepalus.*

X. CRISTATI.

Corolla-tube decidedly gibbous-ventricose; sterile stamen densely yellow-villous; corolla purplish.
Stem viscid-villous as well as puberulent, especially the upper part.
Inflorescence densely glandular-villous; corolla 2.5–3.5 cm. long; leaves entire or slightly denticulate. 38. *P. Erianthera.*
Inflorescence sparingly glandular-villous; corolla 2–2.5 cm. long; leaves sharply dentate. 39. *P. saliens.*
Stem merely puberulent.
Basal leaf-blades obovate, spatulate, or ovate, broader than the cauline leaves.
Corolla 2–2.5 cm. long. 40. *P. Cleburnei.*
Corolla 15–18 cm. long. 41. *P. Moffattii.*
Basal leaf-blades linear to linear-oblanceolate, usually narrower than the upper cauline leaves.
Corolla over 2 cm. long; calyx-lobes linear-lanceolate, about 8 mm. long. 42. *P. Jamesii.*
Corolla glabrous within, less than 2 cm. long; calyx-lobes lanceolate, 4–5 mm. long. 43. *P. pumilus.*
Corolla-tube funnelform, scarcely gibbous; sterile stamen sparingly yellow-villous above; corolla white. 44. *P. albidus.*

XI. HARBOURIANI.

One species. 45. *P. Harbourii.*

XII. CONFERTI.

Sterile filament usually naked; leaves sharply dentate. 46. *P. deustus.*
Sterile filament bearded; leaves entire or denticulate.
Calyx glabrous or puberulent but not glandular.
Corolla sulphur-yellow. 47. *P. confertus.*

Corolla purple.
Calyx 2–3 mm. long; lobes rounded-ovate, acute, denticulate; leaves thin, the upper acuminate. 48. *P. Watsonii.*
Calyx 5–6 mm. long; lobes ovate, abruptly acuminate or obtuse; leaves firm, not acuminate.
Corolla more than 1 cm. long; upper stem-leaves broadly lanceolate, often rounded at the base; plants 3 dm. high or more.
Calyx-lobes ovate, acuminate. 49. *P. Rydbergii.*
Calyx-lobes broadly obovate, obtuse or abruptly short-acuminate. 50. *P. laxus.*
Corolla less than 1 cm. long; limb small; upper stem-leaves linear-lanceolate; plant seldom more than 3 dm. high. 51. *P. procerus.*
Calyx and inflorescence more or less glandular.
Leaves more or less denticulate.
Upper stem-leaves broad, ovate-cordate, acuminate, clasping.
Stem pubescent; calyx-lobes not scarious. 52. *P. ovatus.*
Stem glabrous or sparingly puberulent up to the inflorescence; calyx-lobes margined.
Leaves firm; inflorescence rather dense; calyx-lobes narrowly scarious-margined. 53. *P. pinetorum.*
Leaves thin; inflorescence open; calyx-lobes not scarious-margined. 54. *C. leptophyllus.*
Upper stem-leaves lanceolate or linear.
Calyx-lobes elongate-lanceolate, not scarious; flowers ascending; stem-leaves linear-lanceolate or linear. 62. *P. gracilis.*
Calyx-lobes ovate-lanceolate, scarious-margined below and usually toothed; stem-leaves oblong-lanceolate or lanceolate.
Tall, 3–5 dm. high; calyx-lobes acute. 55. *P. Wilcoxii.*
Low, less than 3 dm. high; calyx-lobes abruptly acuminate. 60. *P. virens.*
Leaves entire or essentially so.
Plant depressed, decumbent; stems less than 2 dm. high; basal leaves usually less than 3 cm. long, with rhombic-ovate or rounded-spatulate blades.
Corolla about 1.5 cm. long; stem-leaves more or less denticulate. 56. *P. albertinus.*
Corolla 1 cm. long or less; stem-leaves entire. 57. *P. brevifolius.*
Plant not depressed, 2–7 dm. high; basal leaves more than 3 cm. long, with oblanceolate blades; corolla 1.5 cm. long or more.
Calyx-lobes ovate, broadly scarious-margined.
Corolla sulphur-yellow. 58. *P. attenuatus.*
Corolla purplish.
Stem-leaves ample, lanceolate or oblong.
Stem and leaves glabrous or nearly so.
Leaves thick, darkening in drying; stem-leaves always entire; inflorescence interrupted, congested. 59. *P. pseudoprocerus.*
Leaves thin, not darkening in drying; stem-leaves usually denticulate; inflorescence not congested, a more or less continuous panicle. 60. *P. virens.*
Stem and leaves decidedly puberulent. 68. *P. humilis.*
Stem-leaves linear or linear-lanceolate, reduced; basal leaves numerous, oblanceolate to almost linear. 61. *P. aridus.*
Calyx-lobes narrowly lanceolate, slightly scarious-margined.
Leaves thick and darkening in drying; inflorescence congested and interrupted; corolla dark blue-purple.
Plant 2–3 dm. high; upper stem-leaves linear-lanceolate or oblong. 62. *P. pseudohumilis.*
Plant 5–7 dm. high; upper stem-leaves ovate-lanceolate, less than half as long as the internodes. 50. *P. laxus.*
Leaves thin, light green, not darkening in drying; inflorescence a continuous panicle; corolla white, light blue, or pink; leaves linear or linear-lanceolate.
Stem glabrous or nearly so.
Inflorescence narrow; pedicels short; stem-leaves linear-lanceolate. 63. *P. gracilis.*
Inflorescence open; pedicels long; stem-leaves narrowly linear. 64. *P. oliganthus.*
Stem densely puberulent.
Basal leaf-blades linear-oblanceolate.
Throat of the corolla funnelform, glandular-puberulent within; limb ample; lower lip almost equalling the upper; sterile stamen bearded at the end. 65. *P. puberulentus.*
Throat of the corolla almost cylindric; limb small; lower lip shorter than the upper, pubescent within; sterile filament bearded at least half its length
Stem-leaves narrowly linear; calyx-lobes not scarious-margined. 66. *P. oreganus.*
Stem-leaves narrowly lanceolate; calyx-lobes usually with narrow scarious margins. 67. *P. radicosus.*
Basal leaf-blades oval or ovate. 68. *P. humilis.*

XIII. LARICIFOLII.

Calyx-lobes distinctly scarious-margined; lower lip of the corolla slightly hairy within or glabrous. 69. *P. exilifolius.*

Calyx-lobes not scarious-margined; lower lip of the corolla densely bearded within. 70. *P. laricifolius.*

XIV. AMBIGUI.

Corolla-tube over 1 cm. long. 71. *P. ambiguus.*
Corolla-tube about 5 mm. long. 72. *P. Thurberi.*

XV. CAESPITOSI.

Leaf-blades obovate, spatulate, or broadly oblanceolate.
Leaves green and glabrous or slightly puberulent; calyx-lobes oblong-lanceolate. 73. *P. suffrutescens.*
Leaves densely grayish or whitish puberulent; calyx-lobes lanceolate.
Calyx-lobes linear-lanceolate, over 5 mm. long; plant grayish puberulent. 74. *P. caespitosus.*
Calyx-lobes broadly lanceolate, scarcely 5 mm. long; plant almost white. 75. *P. Thompsoniae.*
Leaf-blades narrowly oblanceolate to linear or filiform.
Calyx-lobes scarcely scarious-margined, entire; inflorescence few-flowered; floral leaves like the rest.
Leaves green and glabrate.
Corolla 20–25 mm. long, deeply 2-lipped, with relatively broad tube. 76. *P. Crandallii.*
Corolla 15–20 mm. long, less deeply 2-lipped, with a narrow tube. 77. *P. xylus.*
Leaves densely canescent-puberulent. 78. *P. teucrioides.*
Calyx-teeth scarious-margined, dentate or erose; inflorescence many-flowered, racemiform; floral leaves reduced. 79. *P. coloradensis.*

XVI. GLANDULOSI.

One species. 80. *P. glandulosus.*

XVII. AZUREI.

Leaves dentate, incised, or pinnatifid.
Corolla about 3 cm. long; flowers in a dense terminal panicle; anthers villous. 81. *P. venustus.*
Corolla 1–3 cm. long; flowers in an open more or less leafy panicle with spreading branches; anthers glabrous.
Leaves opposite.
Leaves incised or pinnatifid. 82. *P. Richardsonii.*
Leaves merely dentate or serrate.
Leaves serrate; corolla 15–20 mm. long. 83. *P. diffusus.*
Leaves saliently dentate; corolla 12–15 mm. long. 84. *P. diphyllus.*
Leaves in whorls of three. 85. *P. triphyllus.*
Leaves entire.
Calyx and inflorescence more or less glandular; leaves puberulent. 86. *P. Kingii.*
Calyx and inflorescence glabrous or the latter somewhat puberulent but not glandular.
Calyx-lobes lanceolate, acute or acuminate.
Stem-leaves lanceolate, oblong or oblanceolate to linear, glabrous.
Plant low and decumbent at the base; lower stem-leaves oblanceolate, the upper oblong; calyx-lobes narrowly lanceolate. 87. *P. Leonardi.*
Plant tall; stem-leaves lanceolate or oblong-lanceolate; calyx-lobes ovate-lanceolate, acuminate. 88. *P. platyphyllus.*
Stem-leaves linear, puberulent. 89. *P. Cusickii.*
Calyx-lobes broadly ovate or obovate, mucronate, scarious-margined; leaves linear to lanceolate. 90. *P. sepalulus.*

XVIII. PUNICEI.

Stem and leaves puberulent; upper stem-leaves more or less acuminate. 91. *P. coccinatus.*
Stem and leaves glabrous or nearly so; stem-leaves obtuse or acute.
Stem-leaves ovate to lanceolate; corolla 2–3 cm. long. 92. *P. Eatonii.*
Stem-leaves linear-lanceolate; corolla 1.5–2 cm. long. 93. *P. utahensis.*

XIX. BARBATI.

Lower lip bearded within. 94. *P. barbatus*
Lower lip glabrous within.
Anthers glabrous; leaves usually glabrous. 95. *P. Torreyi.*
Anthers long-bearded; leaves usually somewhat puberulent. 96. *P. trichander.*

XX. BRIDGESIANI.

One species. 97. *P. Bridgesii.*

8. PENTSTEMONÓPSIS Rydb.

1. *P. Tweedyi.*

9. CHIONÓPHILA Benth.

1. *C. Jamesii.*

10. MÍMULUS L. MONKEY-FLOWER.

Calyx oblique, decidedly inflated in fruit; upper tooth much larger than the rest; corolla yellow.
Calyx-teeth acute; stem neither rooting at the nodes, nor floating.
Perennials, usually tall and erect, 3–6 dm. high; corolla 2–3.5 cm. long; upper calyx-tooth half longer than the rest.

Leaves glabrous; stem pubescent only above. 1. *M. Langsdorfii.*
Leaves and stem pubescent throughout. 2. *M. puberulus.*
Annuals, slender or low; corolla 2 cm. or less long.
Corolla 1.5–2 cm. long, at least twice as long as the calyx.
Stem long, usually slender; upper calyx-lobe about twice as long as the rest; calyx red-spotted. 3. *M. nasutus.*
Stem less than 1 dm. high; upper calyx-lobe only slightly longer than the rest; calyx not spotted. 4. *M. thermalis.*
Corolla 5–10 mm. long, about half longer than the calyx.
Plant perfectly glabrous. 5. *M. Hallii.*
Inflorescence and calyx villous-puberulent. 6. *M. microphyllus.*
Calyx-teeth obtuse; stem decumbent or floating, rooting at the nodes. 7. *M. Geyeri.*

Calyx neither oblique, nor inflated; its lobes nearly equal.
Perennials; flowers 1.5–4 cm. long; sepals linear-lanceolate.
Corolla crimson or rose.
Tall, with erect stem, 3–10 dm. high, not stoloniferous. 8. *M. Lewisii.*
Stem 1–2 dm. high, stoloniferous. 9. *M. Eastwoodiae.*
Corolla yellow; plant low or slender, weak.
Stem leafy throughout. 10. *M. moschatus.*
Stem leafy only at the base. 15. *M. primuloides.*
Annuals; flowers 0.5–2 cm. long; sepals ovate, triangular, or broadly lanceolate.
Leaves petioled; blades cordate to ovate-lanceolate.
Leaf-blades cordate or broadly ovate, indistinctly 5-ribbed.
Corolla 1.5–2 cm. long. 11. *M. peduncularis.*
Corolla 1 cm. or less long.
Leaves not very thin, dark green, decidedly pubescent; stem often purple and villous. 12. *M. floribundus.*
Leaves very thin, membranous, light green, glabrous or nearly so; stem very delicate, white. 13. *M. membranaceus.*
Leaf-blades ovate-lanceolate, tapering at the base, distinctly 3-ribbed. 14. *M. breviflorus.*
Leaves sessile, oval, oblong, lanceolate or linear.
Corolla yellow; lower lip lobed.
Leaves basal or nearly so; peduncle solitary, scape-like, many times longer than the leaves. 15. *M. primuloides.*
Leaves scattered; peduncles axillary, scarcely exceeding the leaves.
Plant villous, 1–4 dm. high; lower lip of the corolla with 2 brown spots. 16. *M. pilosus.*
Plant 1 dm. high or less, glabrous or glandular-puberulent; corolla spotless.
Leaves thick, indistinctly veined; corolla 4–6 mm. long. 17. *M. Suksdorfii.*
Leaves thin, more or less distinctly 3-ribbed; corolla about 8 mm. long. 18. *M. gratioloides.*
Corolla rose-colored; lower lip entire.
Plant glandular-puberulent. 19. *M. rubellus.*
Plant glandular-villous. 20. *M. Breweri.*

11. **EUNÀNUS** Benth.

Calyx hardly at all oblique; teeth almost equal in length; stem glandular-pubescent.
Calyx-lobes lanceolate-subulate; upper stem-leaves somewhat acuminate; corolla more than 2 cm. long. 1. *E. Bigelovii.*
Calyx-lobes oblong-lanceolate, merely acute; leaves obtuse or acute; corolla 1.5–2 cm. long. 2. *E. Tolmiei.*
Calyx decidedly oblique; upper tooth twice as long as the lower; plant glandular-puberulent. 3. *E. Parryi.*

12. **MONNIÈRA** (B. Juss.) P. Br. Water Hyssop. 1. *M. rotundifolia.*

13. **LIMOSÉLLA** L. Mudwort.

Leaves petioled, with spatulate or oblanceolate blades. 1. *L. aquatica.*
Leaves linear-filiform, or subulate. 2. *L. tenuifolia.*

14. **GRATÌOLA** L. Hedge Hyssop.

Flowers without bracts. 1. *G. ebracteata*
Flowers subtended by a pair of bracts similar to the calyx-lobes. 2. *G. virginiana.*

16. **VERÓNICA** (Tourn.) L. Speedwell, Brooklime.

Flowers in axillary racemes.
Leaves all short-petioled; leaf-blades ovate, oblong or oval. 1. *V. americana.*
Leaves of the flowering shoots at least sessile, lanceolate to linear.
Pedicels less than twice as long as the fruit, the latter not strongly flattened; leaves broadly lanceolate. 2. *V. Anagallis-aquatica.*
Pedicels several times as long as the fruit, the latter strongly flattened; leaves linear-lanceolate or linear. 3. *V. scutellata.*
Flowers in terminal spikes or racemes, or solitary in the axils of the leaves.
Perennials; flowers in terminal spikes or racemes; bracts reduced and unlike the leaves.

All leaves sessile, ovate or oval to oblong.
Corolla 4–5 mm. wide, campanulate, blue; capsules obovate or oval, merely emarginate. 4. *V. Wormskjoldii.*
Corolla 8–9 mm. wide, broadly funnelform, violet; capsule obcordate. 5. *V. Cusickii.*
Lower leaves petioled; blades rounded oval or the upper oblong; capsule obcordate. 6. *V. serpyllifolia.*
Annuals; flowers solitary in the axils of the leaves, *i. e.*, bracts resembling the other leaves and only slightly reduced.
Peduncles shorter than the leaves.
Leaf-blades spatulate, oblong, or linear; capsule emarginate. 7. *V. xalapensis.*
Leaf-blades oval or ovate, or the upper lanceolate; capsule obcordate. 8. *V. arvensis.*
Peduncles as long as the leaves or usually longer.
Leaf-blades ovate, or oblong, crenate.
Corolla less than 6 mm. wide.
Capsule narrowly emarginate. 9. *V. agrestis.*
Capsule deeply cleft to near the base. 10. *V. campylopoda.*
Corolla 9–11 mm. broad; capsule with an open shallow apical sinus. 11. *V. Buxbaumii.*
Leaf-blades orbicular or reniform, 3–5-lobed. 12. *V. hederaefolia.*

16. **SŸNTHYRIS** Benth.

Leaves twice or thrice pinnately divided.
Calyx and capsule glabrous; corolla 3–4 mm. long. 1. *S. pinnatifida.*
Calyx and capsule villous; corolla about 6 mm. long. 2. *S. dissecta.*
Leaves not pinnate; blades reniform or rounded, with cordate base.
Leaf-blades deeply cleft and laciniate. 3. *S. laciniata.*
Leaf-blades lobed and dentate or crenate. 4. *S. major.*

17. **BESSÈYA** Rydb. Kitten-tails.

Corolla present.
Flowers not reflexed; calyx-lobes 3–4.
Upper lip of the purple corolla twice as long as the calyx; plant 1–1.5 dm. high. 1. *B. alpina.*
Upper lip of the corolla only slightly longer than the calyx; plant 1.5–3 dm. high.
Corolla purple or pink, not ciliate; divisions of the lower lip obtuse. 2. *B. plantaginea.*
Corolla white or yellowish, ciliate on the margin; divisions of the lower lip acute. 3. *B. Ritteriana.*
Flowers reflexed; calyx-lobes 2; corolla greenish white. 4. *B. reflexa.*
Corolla lacking.
Calyx almost regularly 4-cleft. 5. *B. rubra.*
Calyx split to the base on the upper side, below irregularly divided or cleft into 2 (rarely 3) entire or toothed lobes.
Calyx cleft on the lower side to near the base or at least below the middle. 6. *B. gymnocarpa.*
Calyx cleft only slightly below. 7. *B. wyomingensis*

18. **AGALÌNIS** Raf. Gerardia.

Pedicels slightly if at all longer than the calyx.
Corolla 2–2.5 cm. long. 1. *A. aspera.*
Corolla 1–1.5 cm. long. 2. *A. paupercula.*
Pedicels 2–6 times as long as the calyx. 3. *A. Besseyana.*

19. **CASTILLÈJA** Mutis. Painted Cup, Indian Paint-brush, Painter's Brush, Squaw Feather.

Annuals or biennial.
Leaves and bracts linear to lanceolate, entire. I. Stenanthae.
Leaves pinnatifid; bracts dilated and lobed. II. Coccineae.
Perennials.
Galea several times longer than the very short lip, usually at least two-thirds as long as the corolla-tube; bracts in most species tinged with scarlet, crimson or rose.
Calyx cleft much deeper in front than behind. III. Linariaefoliae.
Calyx about equally cleft in front and behind.
Stem canescent.
Stem tomentose-canescent; bracts entire, or trilobed, with broad rounded middle lobe. IV. Integrae.
Stem strigose or hirsutulous-canescent; bracts 3-cleft, with linear lobes. V. Subcinereae.
Stem glabrous or pubescent, but not canescent.
Leaves entire, rarely the uppermost slightly 3-lobed; corolla-lip very short and callous.
Bracts usually entire and obtuse, oblong to obovate, broad, if 3-lobed with a broad middle lobe.
Bracts tinged with crimson or rose. VI. Rhexifoliae.
Bracts yellow with the very tips brown or red. VII. Lutescentes.

Bracts usually 3-cleft with lanceolate lobes, if entire very acute. VIII. LANCIFOLIAE.
Leaves, at least the upper, pinnately cleft; bracts also cleft; lower corolla-lip not callous, larger. IX. HISPIDAE.
Galea less than 3 times as long as the lip, rarely half as long as the corolla-tube; bracts in most species tinged with yellow or brown.
Leaves entire; bracts also entire or slightly 3-lobed. X. PALLIDAE.
Leaves pinnately divided, at least the upper ones.
Bracts slightly 3-lobed or entire; lobes truncate or rounded at the apex. XI. LUTEAE.
Bracts deeply divided into lanceolate or linear-lanceolate lobes.
Whole plant white-woolly. XII. LINEATAE.
Plant not white-woolly.
Calyx about equally cleft in front and behind or deeper cleft behind.
Lip of the corolla scarcely more than half as long as the galea, not decidedly saccate. XIII. FASCICULATAE.
Lip at least two-thirds as long as the galea, decidedly saccate. XIV. PALLESCENTES.
Calyx much deeper cleft in front than behind.
Corolla 1.5–3 cm. long, slightly exceeding the calyx. XV. BRACHYANTHAE.
Corolla 4–5 cm. long, almost twice as long as the calyx. XVI. SESSILIFLORAE.

I. STENANTHAE.

One species. 1. *C. exilis.*

II. COCCINEAE.

One species. 2. *C. coccinea.*

III. LINARIAEFOLIAE.

Bracts crimson or pink.
Plant low, cespitose, with several stems, about 2–3 dm. high; leaves and bracts pinnately divided; inflorescence short and head-like. 3. *C. collina.*
Plant tall, 4–10 dm. high, with a single or sometimes 2–3 stems; leaves entire or the upper with 2–3 lobes; inflorescence elongate.
Leaves all narrowly linear. 4. *C. linariaefolia.*
Upper leaves lanceolate. 5. *C. Crista-galli.*
Bracts yellowish or brownish.
Bracts cream-color; inflorescence villous-hirsute, with yellowish hairs. 6. *C. cognata.*
Bracts brownish; inflorescence villous, with short white hairs. 7. *C. arcuata.*

IV. INTEGRAE.

Leaves entire.
Bracts oblong. 8. *C. integra.*
Bracts obovate. 9. *C. gloriosa.*
Leaves pinnatifid. 10. *C. Lindheimeri.*

V. SUBCINEREAE.

One species. 11. *C. subcinerea.*

VI. RHEXIFOLIAE.

Corolla 4–5 cm. long, nearly twice as long as the bracts. 12. *C. magna.*
Corolla 1.5–3.5 cm. long, little if at all surpassing the bracts.
Bracts scarlet or crimson, rarely pink.
Corolla about 3 cm. long; stem 3–5 dm. high.
Leaves narrowly lanceolate; bracts acute and usually deeply cleft. 13. *C. confusa.*
Leaves, at least the upper ones, broadly lanceolate or oblong-ovate; bracts rounded at the apex, entire or with a very broad middle lobe and small lateral ones. 14. *C. rhexifolia.*
Corolla 1.5–2 cm., rarely 2.5 cm. long; plant 2–3 dm. high.
Leaves lanceolate to linear.
Stem and leaves glabrous or puberulent. 15. *C. lauta.*
Stem and leaves viscid-pubescent. 16. *C. pinetorum.*
Leaves oblong, elliptic, or ovate-lanceolate.
Stem and leaves densely pubescent. 17. *C. Leonardi.*
Stem glabrous or puberulent; leaves finely puberulent. 18. *C. humilis.*
Bracts brownish or yellowish. 19. *C. brunnescens.*

VII. LUTESCENTES.

Leaves linear; corolla 2–3 cm. long.
Stem 2–3 dm. high; corolla scarcely longer than the calyx. 20. *C. dubia.*
Stem 3–5 dm. high; corolla decidedly longer than the calyx.
Calyx-lobes obtuse. 21. *C. desertorum.*
Calyx-lobes acute or acuminate. 22. *C. lutescens.*
Leaves lanceolate; corolla nearly 4 cm. long; calyx-lobes acute. 23. *C. variabilis.*

VIII. LANCIFOLIAE.

Corolla 3.5–4 cm. long; galea 1.5–2 cm. long; leaves lanceolate.
Bracts brick-red or yellowish; leaves usually more or less pubescent. 23. *C. variabilis.*

Bracts crimson; leaves glabrous or nearly so. 24. *C. Vreelandii.*
Corolla 3 cm. long or less.
Calyx and upper part of the stem densely white-villous. 25. *C. trinervis.*
Calyx and upper part of the stem sparingly hirsute-villous.
Plants growing more or less in clumps, with a short caudex.
Corolla 2–3 cm. long; bracts usually more or less crimson.
Plant tall, 4–6 cm. high; calyx-lobes acute or acuminate.
Galea 15–18 mm. long. 13. *C. confusa.*
Galea about 10 mm. long. 26. *C. Tweedyi.*
Plant low, 1–3 dm. high; calyx-lobes obtuse. 27. *C. subpurpurascens.*
Corolla less than 2 cm. long; bracts brick-red. 28. *C. mineata.*
Plants with solitary stems from horizontal or ascending rootstocks. 29. *C. lancifolia.*

IX. HISPIDAE.

Calyx-lobes rounded at the apex; bracts purplish, much exceeding the flowers. 30. *C. obtusiloba.*
Calyx-lobes acute or rarely obtuse at the apex; bracts if at all only slightly exceeding the flowers.
Corolla about 4 cm. long.
Plant simple, with a horizontal rootstock; galea longer than the corolla-tube. 31. *C. Suksdorfii.*
Plant cespitose, with a short caudex; galea not longer than the corolla-tube. 13. *C. confusa.*
Corolla 1.5–3 cm. long; plant more or less cespitose, with a short caudex.
Stem more or less pubescent, 3–6 dm. high.
Lobes of the calyces and bracts lanceolate or oblong; bracts usually crimson.
Body of the leaves lanceolate; lobes directed forward.
Plant decidedly glandular- or viscid-pubescent. 32. *C. viscida.*
Plant scarcely viscid, but puberulent and hirsute.
Corolla much exceeding the bracts; galea equalling or exceeding the tube. 33. *C. amplifolia.*
Corolla slightly if at all exceeding the bracts; galea shorter than the tube.
Bracts with very short lobes or merely toothed; stem sparingly hirsute or merely puberulent. 34. *C. Bradburyi.*
Bracts with long narrow lobes; stem copiously hirsute. 35. *C. hispida.*
Body of the leaves linear, the lobes linear, divergent.
Galea shorter than the corolla-tube. 36. *C. angustifolia.*
Galea longer than the corolla-tube. 37. *C. chromosa.*
Lobes of the calyces and bracts narrowly linear; bracts brick-red. 38. *C. linearis.*
Stem glabrous up to the inflorescence, 1–2 dm. high. 39. *C. Haydeni*

X. PALLIDAE.

Upper leaves long-acuminate, caudate-falcate.
Stem up to the inflorescence and leaves puberulent or glabrate. 40. *C. pallida.*
Stem and leaves pilose. 41. *C. Cusickii.*
Upper leaves neither caudate, nor falcate.
Bracts not pale-yellow; corolla usually less than 2 cm. long.
Stem slender, 2–4 dm. high; bracts rose or brownish.
Stems from a rootstock, sparingly villous. 42. *C. gracillima.*
Stems from a caudex, hirsutulous, or villous in the inflorescence. 43. *C. Bennittii.*
Stem 0.5–2 dm. high, from a cespitose caudex.
Bracts puberulent, dark brownish scarlet. 44. *C. parvula.*
Bracts villous, varying from light brownish crimson to greenish yellow. 45. *C. occidentalis.*
Bracts pale yellow; corolla usually over 2 cm. long, except in the first.
Plant 0.5–2 dm. high, densely villous above. 45. *C. occidentalis.*
Plant 2–4 dm. high, slightly if at all villous in the inflorescence.
Stems solitary from a creeping rootstock; corolla usually margined with yellow; plant darkening in drying. 46. *C. luteovirens.*
Stems growing in clumps, with a short caudex; plant rarely darkening in drying.
Upper leaves broadly lanceolate or ovate; all leaves 3-ribbed. 47. *C. sulphurea.*
Leaves all linear, 1-ribbed, or the uppermost linear-lanceolate and indistinctly 3-ribbed. 48. *C. wyomingensis.*

XI. LUTEAE.

Plant seldom over 1 dm. high; bracts green or tinged with brownish rose; calyx with short obtuse lobes.
Stem less than 2 dm. high, sparingly villous; bracts tinged with brown. 49. *C. pulchella.*
Stem 2–3 dm. high, hirsutulous; bracts tinged with rose. 43. *C. Bennittii.*
Plant 2–4 dm. high; bracts pale yellow.
Stems villous; leaves lanceolate. 50. *C. lutea.*
Stems pilose; leaves linear or lance-linear. 41. *C. Cusickii.*

XII. LINEATAE.

One species. 51. *C. lineata.*

XIII. Fasciculatae.

Bracts rhombic-obovate or broadly cuneate in outline, almost pectinately divided. 52. *C. Pecten.*

Bracts ovate or lanceolate in outline, pinnatifid.
Upper leaves and bracts, only 3-fid at or above the middle. 48. *C. wyomingensis.*
Leaves and bracts deeply divided into linear divisions. 53. *C. fasciculata.*

XIV. Pallescentes.

Plant low, less than 2 dm. high, finely puberulent. 54. *C. pallescens.*
Plant 1.5–3 dm. high, hirsute or villous as well as puberulent.
Lateral divisions of the calyx deeply cleft into two subulate lobes; corolla 12–15 mm. long. 55. *C. longispica.*
Lateral divisions of the calyx merely 2-toothed.
Lower lip two-thirds as long as the galea; corolla about 2.5 cm. long. 50. *C. lutea.*
Lower lip almost equalling the galea; corolla about 2 cm. long. 56. *C. pilifera.*

XV. Brachyanthae.

Corolla 2–3 cm. long; stem glabrous or nearly so. 6. *C. cognata.*
Corolla 1.5–2.5 cm. long; stem pubescent.
Lower lip of the corolla fully half as long as the galea; plant less than 1 dm. high. 57. *C. puberula.*
Lower lip one-fifth to one-third as long as the galea; plant 3–4 dm. high.
Lower lip about one-third as long as the galea, its lobes lanceolate, acuminate.
Stem 5–6 dm. high, finely puberulent; bracts minutely puberulent. 58. *C. cervina.*
Stem 2–4 dm. high, more or less hirsute-villous; bracts shortly villous-hirsute. 59. *C. brachyantha.*
Lower lip one-fifth to one-fourth as long as the galea, its lobes ovate, acute. 60. *C. flava.*

XVI. Sessiliflorae.

One species. 61. *C. sessiliflora.*

20. **ORTHOCÁRPUS** Nutt. Owl's Clover.

Bracts dilated, entire or with a broad middle lobe and narrow lateral ones, somewhat petaloid. 1. *O. tenuifolius.*
Bracts herbaceous, resembling the leaves, 3- (rarely 5-) cleft, with lanceolate lobes
Corolla yellow; spike dense; seeds ridged.
Plant hirsute; corolla not three times as long as the calyx. 2. *O. luteus.*
Plant puberulent; corolla 3–4 times as long as the calyx. 3. *O. Tolmiei.*
Corolla white, turning rose-purple; spike lax; seeds loosely reticulate. 4. *O. purpureo-albus.*

21. **TRIPHYSÀRIA** (Benth.) F. & M. Pelican Flower, Johnny-Tuck.

1. *T. hispida.*

22. **ADENOSTÈGIA** Benth.

Calyx diphyllous; flowers short-pedicelled, with 2–4 bractlets; flowers in head-like spikes.
Stamens 4; anthers 2-celled; both divisions of the calyx 5–6-ribbed; leaves 3–7-parted.
Bracts as well as the whole plant puberulent.
Corolla 2.5 cm. long, more purplish. 1. *A. Wrightii.*
Corolla 12–20 mm. long, dull yellow. 2. *A. ramosa.*
Bracts ciliate with long white, more or less curled, hairs. 3. *A. ciliosa.*
Stamens 2; anthers 1-celled; posterior division of the calyx only 2-ribbed; leaves narrowly linear, entire, except those subtending the heads. 4. *A. bicolor.*
Calyx monophyllous, *i. e.*, the anterior division lacking; flowers sessile without bractlets; flowers in more elongate spikes.
Leaves and bracts all entire; anthers of the shorter stamens with only the smaller lower sacs. 5. *A. canescens.*
Leaves 3–5-parted; anthers of all the stamens 2-celled. 6. *A. Kingii.*

23. **EUPHRÀSIA** (Tourn.) L. Eyebright.

Bracts with acute or obtuse teeth.
Teeth of the bracts obtuse; corolla 5–6 mm. long; inflorescence capitate. 1. *E. mollis.*
Teeth of the bracts acute; corolla 4.5–5.5 mm. long; inflorescence becoming spicate 2. *E. disjuncta*
Bracts with subulate or bristle-tipped teeth. 3. *E. hudsonica.*

24. **ELEPHANTÉLLA** Rydb. Little Red Elephant, Elephant's Head, Elephant Flower. 1. *E. groenlandica.*

25. **PEDICULÀRIS** (Tourn.) L. Lousewort, Indian Warrior, Duck-bill.

Galea produced into a distinct beak.
Beak long, strongly incurved; lip very broad, meeting or enclosing the tip of the beak.

Leaves undivided, minutely doubly crenate. 1. *P. racemosa.*
Leaves pinnately divided into linear dentate divisions.
Corolla-tube not exserted; beak more or less spirally incurved; calyx deeply cleft in front.
Corolla white; calyx greenish-striate and glabrous. 2. *P. contorta.*
Corolla purplish or rose; calyx purple-striate and villous at the base. 3. *P. ctenophora.*
Corolla-tube distinctly exserted; beak crescent-shaped, arcuate; calyx not deeply cleft in front. 4. *P. lunata.*
Beak short and straight; lip narrower and not meeting the tip of the galea.
Beak about as long as the width of the galea; lip reflexed; primary divisions of the leaves short (8 mm. or less long), not narrowed at the base.
Corolla yellow or ochroleucous. 5. *P. Parryi.*
Corolla purple. 6. *P. Hallii.*
Beak much shorter than the width of the galea; lip ascending; lower primary divisions of the leaves 8–30 mm. long, usually narrowed at the base.
Plant 1–2 dm. high; bracts ovate, all shorter than the flowers. 7. *P. Canbyi.*
Plant 3–6 dm. high; bracts linear, oblong, or lanceolate, the lower equalling or exceeding the flowers. 8. *P. stifolia.*
Galea not produced into a distinct beak, but often with two lateral teeth near the apex.
Leaves pinnately divided or lobed.
Leaves divided to the midrib or nearly so into narrow, acute, dentate or serrate or incised divisions.
Galea distinctly arcuate; stems 2–15 dm. high (except in *P. scopulorum*, which often is only 1–2 dm. high).
Galea toothless; plant 4–10 dm. high; lip not reaching the tip of the galea.
Corolla pale yellow; spike elongate, 6–30 cm. long; bracts lanceolate, usually produced and exceeding the flowers. 9. *P. bracteosa.*
Corolla tinged with purple; spike 3–10 cm. long; bracts ovate, short-acuminate and about half as long as the flowers. 10. *P. montanensis.*
Galea with two lateral teeth.
Plant tall, 3–15 dm. high; corolla sordid yellow, 3–3.5 cm. long; lip almost reaching the tip of the galea. 11. *P. Grayi.*
Plant lower, 1–4 dm. high; corolla purple, 2–2.5 cm. long; lip not reaching the tip of the galea.
Leaves divided to the midrib, *i. e.*, rachis not winged; divisions incised. 12. *P. cystopteridifolia.*
Leaves not quite divided to the midrib, *i. e.*, rachis winged; divisions merely dentate. 13. *P. scopulorum.*
Galea scarcely arcuate, nearly straight, except the hood-like rounded apex, usually toothless; plant less than 1 dm. high.
Spike very dense, densely lanate; lower lip almost equalling the galea. 14. *P. lanata.*
Spike laxer, sparingly if at all lanate; lower lip of the corolla much shorter than the upper.
Corolla 18–22 mm. long; lower lip 5 mm. long; galea merely tinged with purple. 15. *P. Oederi.*
Corolla about 12 mm. long; lower lip of the corolla about 3 mm. long; upper portion of the galea dark purple or crimson. 16. *R. flammea.*
Leaves pinnately lobed two-thirds to the midrib or less, with broadly oblong or rounded, obtuse and crenate lobes.
Plants caulescent; stamens merely acute.
Stem 1–3 dm. high; lower lip of the corolla much shorter than the upper. 17. *P. canadensis.*
Stem 3–10 dm. high; lower lip of the corolla reaching almost to the tip of the galea. 18. *P. lanceolata.*
Plants almost acaulescent; stamens aristate-acuminate at the base. 19. *P. centranthera.*
Leaves merely crenate. 20. *P. crenulata.*

26. RHINÁNTHUS L. Rattle-box, Yellow Rattle.

Corolla-tube exserted; teeth of the upper corolla-lip triangular, 1 mm. long. 1. *R. Kyrollae.*
Corolla-tube included; teeth of the upper lip rounded. 2. *R. rigidus.*

27. MELÁMPYRUM (Tourn.) L. Cow-Wheat. 1. *M. lineare.*

Family 118. **LENTIBULARIACEAE.** Bladderwort Family.

Calyx of 2 sepals; corolla-tube closed by a palate; plants submerged, with dissected leaves. 1. Utricularia.
Calyx of 5 sepals; corolla with an open throat; plants aerial, with basal entire leaves 2. Pinguicula.

1. UTRICULÀRIA L. Bladderwort.

Leaves 2–3 times pinnately divided, with long divisions; corolla about 12 mm. broad; spur prominent, elongate-conic, curved. 1. *U. vulgaris*

Leaves dichotomously divided, with very short divisions; corolla 4–6 mm. wide; spur a mere protuberance. 2. *U. minor.*

2. PINGUÍCULA (Tourn.) L. Butterwort.

Lower lip of the corolla about 15 mm. long; base of the corolla conic, ending in a straight filiform cylindric spur. 1. *P. macroceras.*
Lower lip of the corolla 10–12 mm. long; base of the corolla ovoid-conic, ending in a tapering, slightly recurved spur. 2. *P. vulgaris.*

Family 119. **OROBANCHACEAE.** Broom-rape Family.

Flowers subtended by bractlets. 1. Myzorrhiza.
Flowers without bractlets. 2. Thalesia.

1. MYZORRHÌZA Philippi. Broom-rape.

Flowers all manifestly pedicelled; inflorescence corymbose; anthers woolly. 1. *M. corymbosa.*
Flowers sessile or nearly so; only the lowest sometimes short-pedicelled; flowers spicate or paniculate.
Inflorescence spicate, though sometimes branched; corolla usually purple; stem not bulbose at the base.
Corolla 20–25 mm. long; anthers woolly. 2. *M. multiflora.*
Corolla 15–20 mm. long; anthers glabrous. 3. *M. ludoviciana.*
Inflorescence usually a loose elongated panicle; corolla yellow, about 12 mm. long; stem bulbose at the base. 4. *M. pinorum*

2. THALÈSIA Raf. Cancer-root.

Calyx-lobes subulate, much longer than the tube; stem very short, 1–3-flowered.
Corolla lilac or pink, 2 cm. or less long; tube 4–5 mm. wide at the throat; lobes oblong, acutish or obtuse. 1. *T. sedi.*
Corolla deep purple, often with yellowish veins; lobes oval or semi-orbicular, rounded
Corolla 15–18 mm. long; tube strongly curved, 4–5 mm. wide at the throat. 2. *T. minuta.*
Corolla 20–30 mm. long; tube not so strongly curved, 5–8 mm. wide at the throat. 3. *T. purpurea.*
Calyx-lobes lanceolate or triangular, about equalling the tube; stem evident, several-flowered.
Corolla purplish, its lobes rounded or merely mucronate; sepals more or less acuminate. 4. *T. fasciculata.*
Corolla sulphur-yellow, its lobes acute; sepals acute. 5. *T. lutea.*

Family 120. **MARTYNIACEAE.** Unicorn-plant Family.

1. MARTÝNIA L. Unicorn-plant. 1. *M. Louisiana.*

Family 121. **PLANTAGINACEAE.** Plantain Family.

1. PLANTÀGO (Tourn.) L. Plantain, Ribgrass.

Flowers all perfect; corolla not closed over the fruit; stamens 4.
Leaves lanceolate to ovate; neither leaves nor spike silky pubescent or lanate; stamens in all the flowers long-exserted.
Spike cylindrical; seeds not concave on the faces.
Leaves ovate, abruptly contracted at the base; seeds more than 2 in each cell.
Pyxis dehiscent at the middle, round-ovoid, obtusish; leaves usually thick and the dense spike obtuse. 1. *P. major.*
Pyxis dehiscent far below the middle, elongate-ovoid, very acute; leaves thin and the lax spike acute. 2. *P. asiatica.*
Leaves lanceolate, gradually tapering into the petioles; seeds not more than 2 in each cell.
Leaves thin; plant not woolly at the base. 3. *P. Tweedyi.*
Leaves thick.
Plant sparingly pubescent, with red or brown wool at the base. 4. *P. eriopoda.*
Plant copiously villous with jointed hairs, not woolly at the base. 5. *P. septata.*
Spike short, oblong, 1–3 cm. long; seeds concave on the faces; leaves narrowly lanceolate. 6. *P. lanceolata.*
Leaves linear; leaves or peduncles or both more or less pubescent with long silky hairs; anther in the more fertile flowers included; seeds solitary in each cell, concave on the faces.
Bracts aristate or herbaceous, at least the lower ones 2–many times as long as the flowers.
Bracts all much exceeding the flowers.
Plant dark green; spike compact. 7. *P. aristata.*
Plant light green; spike more slender. 8. *P. spinulosa*
Upper bracts scarcely exceeding the flowers. 9. *P. xerodea.*

Bracts neither aristate nor foliaceous, slightly if at all exceeding the flowers.
Bracts linear-subulate; spike long-cylindric. 10. *P. Purshii.*
Bracts ovate, obtuse; spike globose to oblong. 11. *P. scariosa.*
Flowers subdioecious or polygamo-dioecious; corolla in the fertile plant remaining closed or early closing over the capsule; stamens 2; leaves filiform. 12. *P. elongata.*

Family 122. **RUBIACEAE.** Madder Family.

Leaves opposite; corolla funnelform. 1. Kelloggia.
Leaves apparently verticillate; corolla rotate.
Flowers 3–4-merous, usually white; fruit dry. 2. Galium.
Flowers 5-merous, yellow; fruit baccate. 3. Rubia.

1. **KELLÓGGIA** Torr.

1. *K. galioides.*

2. **GÀLIUM** L. Bedstraw, Cleavers.

Flowers perfect; fruit hirsute with uncinnate hairs, or glabrous.
Annuals.
Stem coarse, reclining; leaves 6–8 in the whorls.
Leaves linear or oblanceolate.
Leaves 2–7 cm. long; nutlets when ripe 3–5 mm. in diameter; flowers white. 1. *G. Aparine.*
Leaves 0.5–2 cm. long; nutlet when ripe 2–3 mm. in diameter; flowers ochroleucous. 2. *G. Vaillantii.*
Leaves elliptic. 10. *G. flaviflorum.*
Stem slender, erect or ascending; leaves 2–4 in the whorls.
Leaves ovate or oblong, 5–7 mm. long; fruit nearly sessile. 3. *G. proliferum.*
Leaves linear-oblong or linear, often 10–20 mm. long; fruit distinctly peduncled. 4. *G. bifolium.*
Perennials.
Leaves not cuspidate-pointed.
Stem stout; leaves thick, 3-nerved. 5. *G. boreale.*
Stem very slender; leaves 1-nerved.
Leaves mostly 4 in the whorls, 5–15 mm. long.
Leaves obovate to broadly oblong-lanceolate, somewhat fleshy.
Corolla-lobes almost 1 mm. long; pedicels and generally also the stem glabrous. 6. *G. Brandegei.*
Corolla-lobes about 0.5 mm. long; pedicels and stem more or less scabrous. 7. *G. subbiflorum.*
Leaves linear-oblong or linear-oblanceolate. 8. *G. trifidum.*
Leaves of the stem mostly 5–6 in the whorls, 15–30 mm. long. 9. *G. columbianum.*
Leaves cuspidate-pointed.
Fruit uncinate long-hispid; stem glabrous or sparingly hirsute or bristly; inflorescence axillary, mostly simple.
Stem retrorse-bristly; pedicels scarcely exceeding the bracts. 10. *G. flaviflorum.*
Stem glabrous or sparingly hirsute; pedicels much exceeding the small bracts. 11. *G. triflorum.*
Fruit minutely hispidulous or granular-scabrous; stem scabrous on the angles; inflorescence panicled.
Leaves firm, with strong midrib, lanceolate or oblanceolate; pedicels in fruit somewhat spreading. 12. *G. asperulum.*
Leaves thin, oblong, rounded and mucronate at the apex; pedicels very fine, in fruit spreading at right angles. 13. *G. filipes.*
Flowers dioecious, in small cymes; fruit with long, not uncinate hairs; perennials.
Leaves linear. 14. *G. coloradense.*
Leaves ovate or lanceolate.
Plant glabrous or nearly so.
Leaves of the stem lanceolate to ovate, 8–15 mm. long. 15. *G. Watsoni.*
Leaves broadly ovate, 5–8 mm. long. 16. *G. Bloomeri.*
Plant decidedly puberulent.
Plant pruinose-puberulent; leaves broadly ovate, not cuspidate. 17. *G. multiflorum.*
Plant hispidulous-puberulent; leaves lanceolate, cuspidate. 18. *G. stellatum.*

3. **RUBÌA** L. Madder.

1. *R. tinctorum.*

Family 123. **CAPRIFOLIACEAE.** Honeysuckle Family.

Style deeply 3–5-cleft; shrubs or trees with compound cymose inflorescence and drupaceous fruit.
Leaves pinnate; ovary 3–5-celled, each cell with one ovule. 1. Sambucus.
Leaves simple; ovary 1-celled and 1-ovuled. 2. Viburnum.
Style slender, undivided; stigma capitate.
Trailing evergreen herb; flowers long-peduncled, geminate; stamens 4, didynamous 3. Linnaea.

Shrubs; stamens generally 5.
Fruit a few-seeded berry.
Corolla rarely gibbous at the base, regular or nearly so; fruit 2-seeded. 4. SYMPHORICARPOS.
Corolla gibbous at the base, mostly irregular and bilabiate; fruit several-seeded.
Flowers in heads at the ends of the branches or in verticils in the upper axils; upper leaves connate; vines. 5. LONICERA.
Flowers in pairs on axillary peduncles; leaves not connate; erect shrubs.
Bracts and bractlets minute, not foliaceous; berries of the two flowers more or less united. 6. XYLOSTEON.
Bracts and bractlets foliaceous; berries of the two flowers distinct. 7. DISTEGIA.
Fruit a 2-celled capsule; corolla slightly gibbous and somewhat irregular. 8. DIERVILLA.

1. SAMBÙCUS (Tourn.) L. ELDER.

Cyme not flat-topped, thyrsoid-paniculate, the axis continuous.
Fruit red or rarely yellow.
Young branches, inflorescence and the lower surfaces of the leaves pubescent. 1. *S. pubens.*
Whole plant glabrous. 2. *S. microbotrys.*
Fruit black. 3. *S. melanocarpa.*
Cyme flat-topped, umbelliform, 4–5-rayed, the rays again variously compound; fruit blackish.
Fruit without bloom or nearly so, generally less than 5 mm. broad.
Leaflets ovate, ovate-lanceolate, to obovate, dark green. 4. *S. canadensis.*
Leaflets lanceolate, pale green. 5. *S. neomexicana.*
Fruit with copious bloom, generally over 5 mm. broad. 6. *S. coerulea.*

2. VIBÙRNUM (Tourn.) L. ARROW-WOOD, CRANBERRY TREE, SNOW-BALLS.

Leaves palmately veined, usually 3-lobed; fruit red.
Outer flowers of the cyme large, neutral and radiant. 1. *V. Opulus.*
None of the flowers radiant. 2. *V. pauciflorum.*
Leaves pinnately veined, not lobed; fruit blue or black.
Leaves coarsely dentate, pubescent. 3. *V. pubescens.*
Leaves sharply but finely serrulate, glabrous or nearly so. 4. *V. Lentago.*

3. LINNAÈA (Gronov.) L. TWIN-FLOWER.

Calyx-lobes about 2 mm. long; leaves round, oval, or orbicular. 1. *L. americana.*
Calyx-lobes about 4 mm. long; leaves of the fertile shoots mostly broadly obovate-spatulate. 2. *L. longiflora.*

4. SYMPHORICÀRPOS (Dill.) Ludw. CORAL-BERRY, SNOW-BERRY, WOLF-BERRY, STAG-BERRY.

Corolla short, open-campanulate.
Fruit red; style bearded. 1. *S. Symphoricarpos.*
Fruit white; style glabrous.
Style and stamens somewhat exserted; leaves thick. 2. *S. occidentalis.*
Style and stamens not exserted; leaves rather thin.
Erect shrub; leaves 2–5 cm. long; clusters several-flowered. 3. *S. racemosus.*
Diffuse shrub; leaves 1–2.5 cm. long; clusters 1–2-flowered. 4. *S. pauciflorus.*
Corolla elongate, oblong-campanulate to salverform.
Style glabrous; corolla with short, slightly spreading lobes.
Corolla oblong-campanulate, 6–8 mm. long.
Leaves decidedly pubescent; stem puberulent; leaves rounded-oval, obtuse or rounded at the apex. 5. *S. rotundifolius.*
Leaves glabrate or slightly pubescent.
Leaves rounded-ovate or rounded-oval, 3–4 cm. long. 6. *S. utahensis.*
Leaves oval, acute, 1–2 cm. long. 7. *S. vaccinioides.*
Corolla tubular-funnelform, 8–12 mm. long. 8. *S. oreophilus.*
Style bearded; corolla salverform, with long divaricate lobes. 9. *S. longiflorus.*

6. XYLÓSTEON Adans. BUSH OR FLY HONEYSUCKLE, TWINBERRY.

Leaves pale or glaucous, thick, narrow, oblong; fruit black or black-blue with a bloom. 1. *X. coeruleum.*
Leaves bright green, thin, usually broad; fruit red.
Leaves glabrous, oval or broadly oblong. 2. *X. utahense.*
Leaves pubescent and ciliate, ovate or broadly oval, often subcordate at the base.
Leaves rounded at the apex; bracts 1 mm., about one-third as long as the ovaries. 3. *X. ebractulatum.*
Leaves acute or obtuse; bracts one-half as long as the ovaries or more. 4. *X. ciliatum.*

7. DISTÈGIA Raf. SWAMP HONEYSUCKLE, BEARBERRY. 1. *D. involucrata*

8. LONICÈRA L. HONEYSUCKLE.

Corolla 3 cm. long, its limb slightly bilabiate; lobes short; leaves glabrous except the ciliate margins. 1. *L. ciliosa.*
Corolla 2 cm. long, decidedly bilabiate; leaves hairy beneath. 2. *L. glaucescens.*

9. DIERVÍLLA (Tourn.) Mill. BUSH HONEYSUCKLE. 1. *D. Diervilla.*

FAMILY 124. ADOXACEAE. MOSCHATEL FAMILY.

1. ADOXA L. MOSCHATEL, MUSK-ROOT. 1. *A. Moschatellina.*

FAMILY 125. LORANTHACEAE. MISTLETOE FAMILY.

Anthers 2-celled, opening by an apical pore or slit; berry globose; both staminate and pistillate flowers usually 3-merous. 1. PHORADENDRON.
Anthers 1-celled, opening by a transverse circular slit; berry compressed; staminate flowers 3-merous, the pistillate ones 2-merous. 2. RAZOUMOFSKYA.

1. PHORADÉNDRON Nutt. AMERICAN MISTLETOE.

Leaves reduced to scales; pistillate flowers 2 on each internode.
Canescent; twigs terete; spike several-jointed. 1. *P. californicum.*
Glabrous; twigs bluntly 4-angled; spike 1-jointed. 2. *P. juniperinum.*
Leaves with well developed blades; pistillate flowers 6 or more on each internode. 3. *P. Cockerellii.*

2. RAZOUMÓFSKYA Hoffm.

Staminate flowers all or nearly all at the ends of the branches, on distinct pedicels, dichotomously paniculate. 1. *R. americana.*
Staminate flowers nearly all axillary, forming simple or compound spikes.
Branches 1–2 mm. in diameter.
Plant yellowish green; accessory branchlets of fruiting specimens flower-bearing.
Spikes short, 3–5-flowered; stems bluntly angled.
Rather simple, 1–3 cm. high; leaves and sepals obtusish, not distinctly keeled. 2. *R. Douglasii.*
Stout, 3–5 cm. high, branched; leaves and sepals decidedly acute and keeled. 3. *R. laricis.*
Spikes many-flowered; stems sharply angled. 4. *R. cyanocarpa.*
Plant greenish brown; accessory branches merely leaf-bearing. 5. *R. divaricata.*
Branches 3–4 mm. in diameter. 6. *R. cryptopoda.*

FAMILY 126. SANTALACEAE. SANDALWOOD FAMILY.

1. COMÁNDRA Nutt. BASTARD TOADFLAX.

Flowers in corymbose cymes at the end of the stem; leaves sessile; style slender.
Leaves all linear, spreading or reflexed; hypanthium in anthesis cylindrical, constricted above. 1. *C. linearis.*
Leaves at least those of the stem lanceolate, those of the branches narrower; hypanthium in anthesis turbinate, becoming constricted later. 2. *C. pallida.*
Cymes 1–3-flowered on lateral peduncles; leaves short-petioled; style short. 3. *C. livida.*

FAMILY 127. VALERIANACEAE. VALERIAN FAMILY.

Sepals minute or wanting; fruit 3-celled, but only one seed-bearing.
Fruit laterally winged; stem not dichotomous. 1. PLECTRITIS.
Fruit wingless; stem dichotomous. 2. VALERIANELLA.
Calyx-lobes inrolled in flower, in fruit expanding and pappus-like; fruit strictly 1-celled. 3. VALERIANA.

1. PLECTRÌTIS DC. CORN SALAD. 1. *P. macroptera.*

2. VALERIANÉLLA (Tourn.) Hill. CORN SALAD, LAMB'S LETTUCE. 1. *V. Locusta.*

3. VALERIÀNA (Tourn.) L. VALERIAN, TOBACCO-ROOT.

Leaves thick, the lower entire or with linear entire divisions, the veining almost parallel; plants with thick fleshy taproots.
Fruit and ovaries pubescent; bracts in the staminate plant linear-lanceolate. 1. *V. edulis.*
Fruit glabrous.
Fruit scurfy, muricate or rugose.
Basal leaves oblanceolate; fruit broadly ovate; corolla of the staminate plant 2.5–3 mm. wide; root thick. 2. *V. trachycarpa.*
Basal leaves narrowly linear-oblanceolate; fruit narrowly ovate; corolla of staminate flowers less than 2 mm. wide; root rather slender. 3. *V. furfurescens.*

Fruit smooth, narrowly ovate; inflorescence of staminate plant rather dense, with short branches; corolla 3–4 mm. wide. 4. *V. ceratophylla.*
Leaves thin, the cauline ones pinnate; veining distinctly pinnate; plants with rootstocks.
Bases of the stem-leaves and nodes of the stem neither ciliate nor bearded; stem finely pruinose-puberulent.
Fruit pilose; flowers perfect. 5. *V. pubicarpa.*
Fruit glabrous; plant polygamo-dioecious. 6. *V. puberulenta.*
Bases of the stem-leaves and the nodes of the stem ciliate or bearded; stem otherwise glabrous or slightly pubescent.
Ovary and fruit at least when young pubescent. 7. *V. micrantha.*
Ovary and fruit glabrous.
Basal leaf-blades ovate-cordate. 8. *V. ovata.*
Basal leaf-blades spatulate, oval or lanceolate, tapering at the base.
Corolla of the pistillate plants 2–3 mm. long and slightly wider; inflorescence in fruit elongate and narrow. 9. *V. septentrionalis.*
Corolla of the pistillate plants 3 mm. or more long; inflorescence even in fruit short, corymbiform or subcapitate.
Lateral leaflets or lobes of the stem-leaves small, linear-lanceolate, acuminate. 10. *V. acutiloba.*
Lateral leaflets of the stem-leaves ample, ovate to lanceolate, acute.
Corolla 3–4 mm. long; leaflets from entire to slightly sinuate 11. *V. occidentalis.*
Corolla 5–8 mm. long; leaflets from sinuate to coarsely toothed.
Leaflets sinuate or sinuate-denticulate; corolla 5–6 mm. long; tube attenuate at the base. 12. *V. Scouleri.*
Leaflets coarsely sinuate-dentate; corolla 6–8 mm. long, not conspicuously narrowed below. 13. *V. sitchensis.*

Family 128. **ARISTOLOCHIACEAE.** Birthwort Family.

1. ÁSARUM (Tourn.) L. Wild Ginger. 1. *A. caudatum.*

Family 129. **CUCURBITACEAE.** Gourd Family.

Fruit large, with a tough rind, 1-celled, with 3–5 placentae and numerous seeds; corolla large, yellow, campanulate; flowers solitary in the axils. 1. Cucurbita.
Fruit spiny, becoming papery and spongiose, 2–3-celled; seeds few; corolla white, rotate; staminate flowers racemose or paniculate. 2. Micrampelis.

1. CUCÚRBITA (Tourn.) L. Gourd, Pumpkin, Squash. 1. *C. foetidissima.*

2. MICRÁMPELIS Raf. Balsam Apple, Mock Apple. 1. *M. lobata.*

Family 130. **CAMPANULACEAE.** Bellflower Family.

Capsule opening by 2–5 lateral pores.
Corolla campanulate or funnelform; flowers all well developed; capsule turbinate. 1. Campanula.
Corolla rotate; earlier flowers cleistogamous; capsule linear. 2. Specularia.
Capsule thin-walled, irregularly bursting between the ribs, obpyramidal; earlier flowers cleistogamous. 3. Heterocodon.

1. CAMPÁNULA (Tourn.) L. Bellflower, Harebell, Bluebell.

Flowers more than 1 cm. long; plant simple or with erect or ascending branches.
Style not exserted.
Capsule erect, opening by pores near the summit, just below the base of the sepals.
Hypanthium and pod club-shaped, constricted just below the sepals, often hairy; leaves entire; sepals obtuse. 1. *C. uniflora.*
Hypanthium and pod turbinate, not constricted; sepals acuminate.
Hypanthium villous; leaves saliently dentate. 2. *C. lasiocarpa.*
Hypanthium glabrous; leaves entire or minutely denticulate. 3. *C. Parryi.*
Capsule nodding, opening by pores near the base.
Sepals erect; leaves thick. 4. *C. petiolata.*
Sepals spreading or reflexed; leaves thin. 5. *C. heterodoxa.*
Style exserted. 6. *C. MacDougalii.*
Flowers 5–8 mm. long; branches divaricate; stem retrorse-hispid. 7. *C. aparinoides.*

2. SPECULÀRIA (Heist.) Fabricius. Venus's Looking-glass.

Leaves cordate-clasping; capsule oblong. 1. *S. perfoliata.*
Leaves linear or linear-lanceolate; capsule linear-cylindric. 2. *S. leptocarpa.*

3. HETEROCÒDON Nutt. 1. *H. rariflorum.*

Family 131. **LOBELIACEAE.** Lobelia Family.

Anthers distinct, merely surrounding the pistil; stem-leaves reduced, subulate, bract-like. 1. Nemacladus.

Anthers united; stem-leaves developed.
Hypanthium cylindric or linear-clavate; pod at maturity 1-celled.
Aquatic plants with two kinds of flowers, the submerged ones cleistogamous; pod splitting on one side. 2. HOWELLIA.
Land plants of wet situations; flowers all alike; pod splitting lengthwise by 1–3 slits, but the valves remaining united at the apex. 3. BOLELIA.
Hypanthium turbinate or oblong; pod 2-celled, 2-valved.
Corolla with a closed tube. 4. PORTERELLA.
Corolla split to near the base on the upper side. 5. LOBELIA.

1. NEMACLÀDUS Nutt. 1. *N. ramoissimus.*

2. HOWÉLLIA A. Gray. 1. *H. aquatilis.*

3. BOLÈLIA Raf.

Corolla scarcely exceeding the obtuse sepals; stamens shorter than the sepals. 1. *B. brachyantha.*
Corolla and stamens much exceeding the acute sepals. 2. *B. elegans.*

4. PORTERÉLLA Torr.

Pedicels longer than the floral leaves. 1. *P. carnosula.*
Pedicels shorter than the floral leaves. 2. *P. eximia.*

5. LOBÈLIA (Plum.) L. LOBELIA, CARDINAL-FLOWER.

Corolla red.
Leaves oblong-ovate to ovate-lanceolate. 1. *L. cardinalis.*
Leaves narrowly lanceolate to linear. 2. *L. splendens.*
Corolla blue or whitish.
Corolla 2–2.5 cm. long. 3. *L. syphilitica.*
Corolla less than 1 cm. long.
Stem leafy.
Stem-leaves spatulate or oblanceolate; raceme many-flowered; plant puberulent. 4. *L. hirtella.*
Stem-leaves linear or linear-oblanceolate; racemes few-flowered; stem and leaves glabrous. 5. *L. strictiflora.*
Stem scapiform; leaves all in a basal rosette, usually submerged. 6. *L. Dortmanna.*

FAMILY 132. DIPSACEAE. TEASEL FAMILY.

1. DIPSÀCUS L. TEASEL. 1. *D. sylvestris.*

FAMILY 133. AMBROSIACEAE. RAGWEED FAMILY.

Staminate and pistillate flowers in the same heads, the latter few (rarely solitary or none), marginal.
Achenes turgid, obovoid or pear-shaped, marginless.
Involucres of 5 dilated-ovate, rigidly acuminate bracts; achenes with a large terminal areola, surrounded by a disk. 1. OXYTENIA.
Involucres not with dilated rigidly acuminate bracts; terminal areola minute.
Heads paniculate; corolla of the pistillate flowers rudimentary or none. 2. CYCLACHAENA.
Heads spicately or racemosely disposed; corolla of the pistillate flowers evident. 3. IVA.
Achenes flattened, wing-margined; involucres of 5 ovate or oblong herbaceous bracts and within them 1–2 large scarious ones subtending the pistillate flowers. 4. DICORIA.
Staminate and pistillate flowers in different heads, the latter 1–1, without corolla and enclosed in a nut-like or bur-like involucre.
Involucres of the staminate heads with united bracts; receptacles low; rudimentary styles penicillate or fimbriate at the apex.
Involucres of the solitary pistillate flower with 9–12 dilated scarious wings; anther-tips blunt. 5. HYMENOCLEA.
Involucres of the 1–4-flowered pistillate heads not winged, but usually armed with spines or tubercles; anther setiferous-acuminate.
Spines or tubercles of the 1-flowered pistillate heads in a single row. 6. AMBROSIA.
Spines of the 1–4-flowered pistillate heads in more than one row. 7. FRANSERIA.
Involucres of the staminate heads with distinct bracts; receptacle cylindraceous; spines of the 2-flowered pistillate heads in several rows, uncinate. 8. XANTHIUM.

1. OXYTÈNIA Nutt. 1. *O. acerosa.*

2. CYCLACHAÈNA Fresen. HORSEWEED, CARELESS WEED. 1. *C. xanthifolia.*

3. ÌVA L. MARSH ELDER, BOZZLEWEED, SALT SAGE, POVERTY WEED. 1. *I. axillaris.*

4. DICÒRIA T. & G.

Upper leaf-blades broadly spatulate, ovate, or roundish.
Inner bracts 10–15 mm. long; achenes with pectinate margins. 1. *D. Wetherillii.*
Inner bracts 6–8 mm. long; achenes with continuous erose margins. 2. *D. canescens.*
Leaves all oblong-lanceolate to linear.
Fertile flowers solitary in the heads; teeth of the achenes connected by a scarious margin. 3. *D. Brandegei.*
Fertile flowers 2 in each head; achenes without scarious margins. 4. *D. paniculata.*

5. HYMENOCLÈA T. & G. 1. *H. Salsola.*

6. AMBRÒSIA (Tourn.) L. Ragweed, Roman Wormwood, Bitter-weed.

Involucres of the staminate heads 3-ribbed; leaves palmately 3–5-cleft or entire. 1. *A. trifida.*
Involucres of the staminate heads not ribbed; leaves once to thrice pinnatifid.
Annual; fruit with acute teeth.
Leaves thin, not strongly veined, bipinnatifid. 2. *A. elatior.*
Leaves thick, strongly veined, pinnate with broad toothed or cleft segments. 3. *A. media*
Perennial with rootstock; fruit with unarmed or blunt tubercles. 4. *A. psilostachya.*

7. FRANSÈRIA Cav.

Fruit not villous.
Spines of the fruit flat, never hooked.
Plant shrubby; leaves silvery white; pistillate heads mostly 2-flowered and 2-beaked. 1. *F. albicaulis.*
Plant annual; leaves strigose, not white; pistillate heads 1-flowered and 1-beaked.
Leaves bi- or tri-pinnatifid. 2. *F. acanthocarpa.*
Leaves pinnately 3–5-cleft. 3. *F. montana.*
Spines terete, usually more or less curved.
Bur 1-beaked, 1–2-flowered; leaves not tomentose beneath.
Annual; divisions of the leaves oblong or linear-oblong, acute. 4. *F. tenuifolia.*
Perennial with a suffrutescent base; leaf-segments linear, obtuse. 5. *F. linearis.*
Bur 2-beaked, 2-flowered; leaves tomentose beneath; plants perennial with a rootstock.
Leaves interruptedly pinnatifid, with lobed or coarsely toothed divisions. 6. *F. discolor.*
Leaves pinnately 3–5-parted or entire; divisions or blades merely serrulate or entire. 7. *F. tomentosa.*
Fruit villous; plant shrubby. 8. *F. eriocentra.*

8. XÁNTHIUM L. Cocklebur; Clotbur.

Spines of the fruit about 20. 1. *X. oligocanthum.*
Spines of the fruit 50–200.
Bur and its spines merely puberulent or glandular, only slightly if at all hispid. 2. *X. pennsylvanicum.*
Bur and especially its numerous spines very hispid as well as glandular.
Prickles of the bur very numerous and dense, brownish-pubescent. 3. *X. echinatum.*
Prickles of the bur fewer, scattered, yellowish-pubescent.
Body of the bur oval or ovate, not twice as long as broad. 4. *X. glanduliferum.*
Body of the bur oblong, twice as long as thick, densely spiny.
Bur about 2 cm. long; spines not longer than the width of the body. 5. *X. commune.*
Bur 2.5–3 cm. long; spines much longer than the width of the body. 6. *X. speciosum.*

Family 134. **CARDUACEAE.** Thistle Family.

Anther-sacs not tailed at the base.
Stigmatic lines at the base of the style-branches or below the middle; heads always discoid, never yellow or brown.
Style-branches filiform or subulate, hispidulous. Tribe 1. VERNONIEAE.
Style-branches more or less clavate, papillose-puberulent. Tribe 2. EUPATORIEAE.
Stigmatic lines extending to the tips of the style-branches or to the appendage thereof, if present; heads most commonly radiate and with yellow or brown disk-flowers.
Style-branches of the perfect flowers with more or less distinct appendages, these usually strongly hairy outside, glabrous inside, but never with a ring of longer hairs. Tribe 3. ASTEREAE.
Style-branches of the perfect flowers without appendages, or if with appendages, these hairy on both sides and with a ring of longer hairs.
Pappus never capillary; style-branches rarely appendaged.
Bracts of the involucres herbaceous or foliaceous.

Receptacle with chaffy paleae subtending the flowers.
Tribe 6. HELIANTHEAE.
Receptacle naked, or in *Gaillardia* and in some species of *Chaenactis* with bristles; but not chaffy bracted.
Plant-tissues without oil glands. Tribe 7. HELENIEAE.
Plant-tissues, especially the leaves and the bracts with oil-tubes; plants therefore heavy-scented. Tribe 8. TAGETEAE.
Bracts of the involucres dry and scarious. Tribe 9. ANTHEMIDEAE.
Pappus capillary; style-branches often appendaged.
Tribe 10. SENECIONEAE.
Anther-sacs caudate at the base; heads never radiate and corollas yellow only in a few species of *Cirsium*.
Anthers not appendaged at the top; heads heterogamous or dioecious.
Pistillate flowers with filiform corollas. Tribe 4. GNAPHALIEAE.
Pistillate flowers with tubular-ampliate corollas. Tribe 5. ADENOCAULEAE.
Anther with elongated cartilaginous, mostly caudate appendages at the top; flowers all hermaphrodite or the marginal neutral; corolla not filiform.
Tribe 11. CYNAREAE.

Tribe 1. VERNONIEAE.

One genus. 1. VERNONIA.

Tribe 2. EUPATORIEAE.

Achenes 5-angled without intervening ribs.
Pappus double of 2–12 capillary bristles and as many or fewer outer short thin scales. 2. HOFFMEISTERIA.
Pappus of wholly capillary bristles, mostly uniserial. 3. EUPATORIUM.
Achenes 8–20-ribbed or 8–20-striate.
Bracts of the involucre herbaceous or partly colored, not striate. 6. LACINIARIA.
Bracts of the involucres not herbaceous, striate-nerved.
Pappus-bristles plumose; anthers distinct; bracts few. 5. KUHNIA.
Pappus-bristles scabrous or barbellate; anthers united; bracts usually many. 4. COLEOSANTHUS.

Tribe 3. ASTEREAE.

A. Plants not dioecious.
I. Marginal pistillate flowers, if present, ligulate.
a. Ray-flowers yellow or none.
1. Pappus of scales or awns or lacking, never of numerous capillary bristles.
a. Bracts not conspicuously scarious-margined.
Heads small, not over 4 mm. high, few-flowered; pappus more or less paleaceous.
Disk-flowers usually fertile; leaves linear to filiform. 7. GUTIERREZIA.
Disk-flowers sterile; leaves short, obovate or spatulate. 8. AMPHIPAPPUS.
Heads large, many-flowered; involucre in all except one species viscid.
Involucres hemispherical; pappus of a few deciduous awns. 9. GRINDELIA.
Involucres turbinate; pappus of persistent linear, very acute paleae. 10. VANCLEVEA.
b. Bracts with conspicuous scarious fimbriate margins. 11. ACAMPTOPAPPUS.
2. Pappus at least in part of numerous capillary bristles.
a. Pappus double, the inner of capillary bristles, the outer of paleae or short bristles; involucres many-flowered, hemispherical with narrow imbricated bracts. 12. CHRYSOPSIS.
b. Pappus wholly of capillary bristles.
Heads discoid.
Leaves resinous-punctate. 13. ERICAMERIA.
Leaves not resinous-punctate.
Involucres narrowly turbinate, its bracts more or less chartaceous, keeled, arranged in definite (usually 5) vertical ranks; achenes elongate-linear; tips of style-branches subulate-filiform. 14. CHRYSOTHAMNUS.
Involucres broadly turbinate to hemispheric, its bracts more or less imbricate, but not in definite vertical ranks; achenes scarcely elongate-linear.
Style-tips obtuse; involucral bracts narrow and poorly imbricate. (Rayless species of) 45. ERIGERON.
Style-tips acute; bracts either broad or well imbricate or both.
Achenes truncate at the top, gradually tapering towards the base, usually cinereous-pubescent; bracts neither broad nor abruptly acuminate.
Appendages or tips of the style-branches filiform; undershrubs with white-tomentulose stems and glandular-hairy foliage; leaves entire-margined. 21. MACRONEMA.
Appendages or tips of the style-branches subulate to ovate.
Leaves with spinulose-tipped teeth; corolla-tube slender. (Rayless species of) 17. SIDERANTHUS.

Leaves not spinulose; corolla-tube dilated above. 15. ISOCOMA.

Achenes elongate-obovoid, *i. e.*, tapering at both ends, but more so below, multi-striate, glabrous or slightly hairy; bracts of the involucres broad and abruptly acuminate; appendages of the style-branches ovate to short-subulate. 20. OONOPSIS.

Heads radiate.

Rays scarcely longer than the disk-flower. 18. PYRROCOMA.

Rays conspicuous, much exceeding the disk.

Leaves pinnate or toothed; lobes or teeth spinulose-tipped.

Pappus of the fertile achenes deciduous in a ring; annuals, equally leafy throughout; bracts more or less foliaceous. 16. PRIONOPSIS.

Pappus persistent.

Bracts chartaceous, not foliaceous, merely with a green tip; plants annual, or perennial with a caudex, equally leafy throughout; pappus in age more or less spreading; achenes turbinate and densely silky. 17. SIDERANTHUS.

Bracts more or less foliaceous, at least above; plants perennial with taproots, large basal leaves, and few and rather small stem-leaves; pappus not spreading; achenes oblong, glabrous or sparingly pubescent. 18. PYRROCOMA.

Leaves entire or toothed, but teeth not spinulose-tipped.

Bracts not longitudinally striate.

Shrubs with glandular-punctate leaves.

Heads large, solitary; involucral bracts in about 2 series; rays numerous. 19. STENOTOPSIS.

Heads small, paniculate or corymbose; bracts well imbricate, in several series; rays few or none. 13. ERICAMERIA.

Herbs or undershrubs; leaves not glandular-punctate.

Bracts abruptly acuminate; stems leafy up to the sessile heads. 20. OONOPSIS.

Bracts not abruptly acuminate.

Style-appendages filiform, much longer than the stigmatic portion; low shrubs with whitish bark and foliaceous outer bracts. 21. MACRONEMA.

Style-appendages of the stigmas ovate or triangular, not longer than the stigmatic portion.

Plants low, cespitose, with a woody caudex, more or less evergreen leaves, and solitary peduncled heads. 22. STENOTUS.

Plants with wholly herbaceous stem, woody, if at all, only at the caudex; leaves not evergreen.

Bracts, at least the outer, foliaceous or with foliaceous tips.

Disk-flowers tubular; plants with a taproot. 18. PYRROCOMA.

Disk-flowers more or less widened upwards; plants with rootstocks or short caudices.

Heads solitary; rays numerous. 23. TONESTUS.

Heads corymbiform-cymose; rays small and narrow. 24. ORIOCHRYSUM.

Bracts not at all foliaceous or merely with green tips.

Bracts slightly if at all unequal and slightly imbricated; heads solitary or few, peduncled. 45. ERIGERON.

Bracts well imbricated and unequal in length.

Rays not more numerous than the disk-flowers; receptacle alveolate.

Inflorescence racemose or paniculate; bracts not in vertical rows. 25. SOLIDAGO.

Inflorescence corymbiform; bracts in distinct vertical rows. 26. PETRODORIA.

Rays more numerous than the disk-flowers; receptacle fimbriolate; heads corymbose. 27. EUTHAMIA.

Bracts of the involucres longitudinally striate; heads in congested corymbs. 28. OLIGONEURON.

b. Ray-flowers blue, pink, or white.

1. Pappus a mere crown or of few scales or awn-like bristles.

Pappus of a cup-shaped crown and a single awn; dwarf annuals, branched at the base. 29. MONOPTILON.

Pappus of a series of long awns or that of the rays of short scales; annuals or perennials. 30. TOWNSENDIA.

2. Pappus of numerous capillary bristles.

a. Rays only slightly if at all exceeding the pappus; annuals.

Bracts in 2–3 series, the outer foliaceous; stigma-tips acute. 31. BRACHYACTIS.

Bracts in 1–2 series, narrow, not foliaceous; stigma-tips obtuse. 46. LEPTILON.

b. Rays conspicuous, longer than the pappus, usually equalling or exceeding the width of the disk.

Style-tips lanceolate or oblong to filiform.

Bracts in a single series, with hyaline-scarious erose-fimbriate margins; dwarf winter annuals. 32. EREMIASTRUM.

Bracts in at least 2 or usually in more than 2 series.

Pappus simple, of similar bristles.

Plants rush-like, spiny. 33. LEUCOSYRIS.

Plants not spiny.

Perennials, with a rootstock or caudex.

Bracts acuminate, as well as the leaves tipped with callous points or spines; plants with solitary heads at the ends of the stems or branches, and cespitose caudices.

Achenes pubescent; bracts all narrow, the outer not passing into the leaves; heads distinctly peduncled. 34. XYLORRHIZA.

Achenes glabrous; outer bracts broad, foliaceous, passing into the leaves; heads subsessile. 35. HERRICKIA.

Bracts not acuminate, or if long-attenuate with soft tips.

Pappus dilated at the apex; bracts narrow, more or less keeled. 36. UNAMIA.

Pappus not dilated at the apex.

Bracts broad, with a distinct keel or mid-vein, not at all foliaceous. 37. EUCEPHALUS.

Bracts usually narrow, when broad neither keeled nor with a prominent midvein.

Bracts more or less foliaceous or foliaceous-tipped, usually in several series; heads usually several, racemose or paniculate; stigma-tips lanceolate to subulate, shorter than the stigmatic portion. 38. ASTER.

Bracts not foliaceous, narrow and in 1–3 series.

Style-tips slender, usually twice as long as the stigmatic portions; achenes terete. 39. OREOSTEMMA.

Style-tips ovate or triangular and acuminate-subulate; achenes flat. 40. ASTERIGERON.

Annuals or biennials, or if short-lived perennials, with a taproot; bracts in many series, with herbaceous spreading or reflexed tips; stigma-tips linear to filiform. 44. MACHAERANTHERA.

Pappus double, the inner of capillary bristles, the outer of short bristles or scales.

Inner pappus-bristles more or less thickened above; bracts thin-coriaceous, without herbaceous tips, shorter than the disk. 41. DOELINGERIA.

Inner pappus-bristles filiform, not thickened above; bracts equalling the disk. 42. IONACTIS.

Style-tips triangular or ovate, obtuse or rarely acutish; bracts not foliaceous.

Involucres turbinate; bracts well imbricate, in several series, scarious-margined; disk-flowers white. 43. LEUCELENE.

Involucres hemispherical or broader; bracts not scarious-margined, in 1–3 series; disk-corollas yellow, rarely ochroleucous. 45. ERIGERON.

II. Marginal pistillate flowers not ligulate, reduced to a filiform or narrow short tube. 47. ESCHENBACHIA.

B. Heads unisexual, dioecious, discoid; pappus of the staminate flowers with clavate tips. 48. BACCHARIS.

Tribe 4. GNAPHALIEAE.

Shrubs; bracts coriaceous; receptacle naked; pistillate flowers numerous; corolla reduced to a short slender tube; hermaphrodite flowers few and sterile, their pappus with clavate tips. 49. BERTHELOTIA.

Herbs, if at all shrubby only at the base; bracts more or less scarious.
Receptacle chaffy; style or style-branches of the hermaphrodite sterile flowers not truncate.
Pistillate flowers all subtended by paleae and without pappus.
Paleae in fruit enclosing the achenes and falling off with them, tipped with a hyaline appendage.
Heads ovoid; paleae subtending the pistillate flowers boat-shaped, with erect conspicuous hyaline tips, those of the 4–5 hermaphrodite flowers barely concave or plane.
Paleae subtending the central flowers hyaline and deciduous; bracts of the involucres in several series. 50. STYLOCLINE.
Paleae subtending the central flowers coriaceous-herbaceous, ending in a hooked spine, persistent; bracts of the involucres none beside the paleaceous ones enclosing the marginal flowers. 51. ANCISTROCARPHUS.
Heads globose; paleae subtending the pistillate flowers cucullate-saccate and utricular, the apex introrse and the ovate appendage inflexed or porrect; paleae and pappus of the hermaphrodite flowers lacking. 52. PSILOCARPUS.
Paleae in fruit open and merely subtending the achenes, without a hyaline appendage. 53. DIAPERIA.
Pistillate flowers of two kinds, the outer with, the inner without pappus, the latter and the central fertile hermaphrodite flowers not subtended by individual paleae, but the cluster surrounded by a ring of open scarious paleae, the outer subtended by boat-shaped ones. 54. OGLIFA.
Receptacle not chaffy; style or style-branches of the hermaphrodite flowers mostly truncate.
Plants dioecious, or the pistillate heads with a few hermaphrodite flowers in the center.
Pappus-bristles of the pistillate flowers falling off in a ring; central hermaphrodite flowers none. 55. ANTENNARIA.
Pappus-bristles of the pistillate flowers falling off separately; central hermaphrodite flowers present in the pistillate heads. 56. ANAPHALIS.
Plants not dioecious; flowers fertile throughout the heads, hermaphrodite in the middle, surrounded by pistillate ones. 57. GNAPHALIUM.

Tribe 5. ADENOCAULEAE.

Leaves cordate, white-woolly beneath. 58. ADENOCAULON.

Tribe 6. HELIANTHEAE.

A. Bracts (at least the outer series) not enclosing the achenes of the rays; plants not glandular-viscid.
I. Disk-flowers hermaphrodite but sterile.
Marginal pistillate flowers, with conspicuous rays.
Achenes not flattened; ligules in ours white; involucres of very dissimilar sets of bracts. 59. MELAMPODIUM.
Achenes flattened; ligules in ours yellow.
Ray-flowers in 2–3 series; achenes falling away free. 60. SILPHIUM.
Ray-flowers in 1 series; achenes adnate to 2 or 3 paleae and falling away with them. 61. ENGELMANNIA.
Marginal pistillate flowers reduced to a truncate or obliquely-cleft tube; the ligules, if any, reduced to 2 or 3 small teeth.
Acaulescent cespitose perennials; pappus of a pair of lanceolate membranous scales. 62. BOLOPHYTA.
Caulescent annuals; pappus none. 63. PARTHENICE.
II. Disk-flowers fertile.
a. Ray-flowers fertile; the ligules with very short tube, persistent on the achenes and becoming papery in texture.
Achenes of the disk compressed; leaves entire. 64. CRASSINA.
Achenes obtusely 4-angled.
Leaves toothed; paleae pointless, partly enclosing the achenes. 65. HELIOPSIS.
Leaves entire; paleae linear-lanceolate, not enclosing the achenes. (§ *Kalliactis*, *i. e.*, *B. Careyana*, of) 71. BALSAMORRHIZA.
b. Ray-corollas deciduous from the achenes or wanting.
1. Pappus a crown or none, or of a few squamellae on the angles of the achenes, and rarely minute ones between.
a. Achenes of the disk-flowers not obcompressed (except in *Ratibida* and *Ximenesia*): paleae usually more or less concave and clasping.
Receptacle conic, subulate or columnar.
Achenes 4-angled.
Ray-flowers purplish or rarely whitish; disk-corollas almost without a tube; pappus coroniform. 66. BRAUNERIA.
Ray-flowers yellow or none; disk-corollas with a short but manifest tube.
Achenes quadrangular-compressed; apex of the achenes covered by the base of the corolla-tube. 67. GYMNOLOMIA.
Achenes nearly equally 4-angled; apex not covered by the base of the corolla. 68. RUDBECKIA.
Achenes 5-angled; ray-flowers white. 70. GALINSOGA.

Achenes flattened, broad-margined or winged.
69. RATIBIDA.
Receptacle from flat to convex.
Achenes of the disk neither sharp-angled, margined, nor winged.
Rays fertile, their achenes commonly 3-angled or obcompressed: plants with thick balsamiferous taproots.
Pappus none; stem scapiform or with reduced leaves.
71. BALSAMORRHIZA.
Pappus a lacerate chaffy crown or of distinct squamellae; stem low but leafy. 72. WYETHIA.
Rays sterile or wanting; plants not with fleshy taproot.
Pappus none or a minute ring. 67. GYMNOLOMIA.
Pappus of 2 scarious awns. 73. HELIANTHUS.
Achenes of the disk thin-edged, margined or winged.
Ray-flowers neutral; achenes scarcely winged.
Pappus none or an awn to each angle of the achenes.
74. ENCELIA.
Pappus of small teeth between the 2 or more awns or scales over the angles of the achenes.
Plants scapose; achenes with a callous margin.
75. ENCELIOPSIS.
Plants caulescent; achenes not margined.
76. HELIANTHELLA.
Ray-flowers fertile; achenes winged; pappus-awns without intermediate squamellae. 77. XIMENESIA.
b. Achenes obcompressed; paleae flat or hardly concave; involucres distinctly double.
Bracts of the involucres distinct or nearly so.
Pappus in ours of small teeth, a mere border, or wanting.
78. COREOPSIS.
Pappus of 2–4 barbed or hispid awns. 79. BIDENS.
Bracts of the inner involucre united at least to near the middle.
80. THELESPERMA.
2. Pappus of 5–many, linear to lanceolate squamellae with thickened axis and hyaline margins.
Rays fertile; paleae of the receptacle thin and scarious; pappus-squamellae fimbriate. 81. PTILONELLA.
Rays sterile; paleae of the receptacle bristle-form; pappus-squamellae not fimbriate. 110. GAILLARDIA.

B. Bracts of the involucres uniserial, partly or wholly enclosing the achenes of the fertile ray-flowers; plants glandular-viscid.
Achenes of the inconspicuous rays laterally compressed and enclosed in the conduplicately infolded involucral bracts.
Disk-flowers several; corolla hairy; stout annuals with sessile or short-peduncled heads. 82. MADIA.
Disk-flowers solitary; corolla glabrous; slender low annuals with small heads on filiform peduncles. 83. HARPAECARPUS.
Achenes of the ray-flowers with broad and rounded backs, or more commonly obcompressed.
Ligules of the ray-flowers minute; achenes completely invested by the whole involucral bract; disk-flowers solitary; heads small and short-peduncled.
84. HEMIZONELLA.
Ligules of the ray-flowers conspicuous; achenes enclosed in the basal portion of the bracts, the dilated margins of which are abruptly infolded; disk-flowers several or many.
Ray-flowers about 5, with deeply 3-cleft ligules; disk-flowers sterile, without pappus. 85. LAGOPHYLLA.
Ray-flowers 8–20, with merely 3-lobed or toothed ligules; disk-flowers mostly fertile with pappus of 5–20 bristles. 86. BLEPHARIPAPPUS.

Tribe 7. HELENIAE.

I. Ligules persistent and becoming papery on the striate achenes; plants more or less woolly.
Pappus of scales; rays 3–4, very broad; involucres of 4–10 coriaceous woolly bracts.
87. PSILOSTROPHE.
Pappus none; rays 5–50; involucres of numerous thin herbaceous bracts.
88. BAILEYA.

II. Ligules deciduous or none.
A. Achenes flat with only marginal nerves; disk-corollas 4-toothed.
Pappus none or of a single bristle; bracts distinct; suffruticose plants.
89. MONOTHRIX.
Pappus of a lacerate-ciliate crown and sometimes with an additional pair of short awns; bracts more or less connate; not suffruticose plants.
90. PERICOME.
B. Achenes angled, not flat, nerved or striate.
1. Receptacle naked.
a. Bracts of the involucres pale or colored, at least the margins and tips scarious.
Corollas of the disk-flowers with reflexed or spreading lobes; bracts of the broadly campanulate involucres obovate or broadly oblong.
Heads discoid. 96. HYMENOPAPPUS.
Heads radiate; ligules obscurely toothed, yellowish or white.
97. LEUCAMPYX.

Corolla of the disk-flowers with linear, erect lobes; bracts of the turbinate involucres spatulate to linear-oblanceolate in two series; ligules if present deeply cleft, purple. 98. OTHAKE.

b. Bracts of the involucres neither colored nor scarious.

Pappus of numerous barbellulate white bristles, somewhat broadened and united at the base into a ring. 104. SYNTRICHOPAPPUS.

Pappus of scales or wanting.

Achenes either linear-prismatic or clavate-obpyramidal, *t. e.*, very elongate.

Bracts more or less carinate-concave and partly enfolding the achenes; leaves more or less floccose woolly.

Low and diffuse winter annuals; anther-tips subulate; bracts herbaceous; tube of the disk-corollas equalling the throat. 103. ANTHEROPEAS.

Perennials; anther-tips obtuse; bracts firm; tube of the disk-corollas shorter than the throat. 102. ERIOPHYLLUM.

Bracts wholly herbaceous, broad and flat or merely concave, not embracing the achenes; plants not floccose-lanate.

Foliage impressed-punctate; leaves at least the lower opposite.

Perennials, suffruticose at the base; leaf-segments oblong to linear. 91. PICRADENIOPSIS.

Annuals; leaf-segments filiform or nearly so. 95. CEPHALOBEMBIX.

Foliage not impressed-punctate; leaves alternate.

Bracts obovate, cuneate or oblanceolate.

Perennials with a woody caudex; leaves entire; pappus of 10 squamellae. 93. PLATYSCHKUHRIA.

Annuals; leaves dissected; pappus wanting. 92. AMAURIOPSIS.

Bracts linear.

Bracts in one row or two subequal rows; plant not fleshy; achenes linear.

Heads radiate, but ligules inconspicuous; pappus of opaque squamellae. 99. RIGIOPAPPUS.

Heads discoid; pappus of hyaline squamellae.

Achenes angled; squamellae with strong midribs. 100. CHAMAECHENACTIS.

Achenes scarcely angled; squamellae not conspicuously ribbed. 101. CHAENACTIS.

Bracts in 2–3 rows; heads radiate; leaves more or less fleshy. 94. HULSEA.

Achenes obpyramidal, not 4 times as long as broad.

Bracts of the involucres erect, not spreading nor reflexed.

Involucres many-flowered; pappus present; achenes tapering below.

Bracts of the involucres nearly equal and similar, all distinct.

Bracts few; corolla flesh-colored; rays wanting. 100. CHAMAECHAENACTIS.

Bracts numerous; corollas yellow; rays usually present.

Leaves entire; squamellae short, obtuse or abruptly contracted into a point. 105. TETRANEURIS.

Leaves pinnatifid; squamellae linear-lanceolate, attenuate but not awn-tipped. 106. RYDBERGIA.

Outer bracts united below; leaves usually pinnatifid with narrow divisions. 107. HYMENOXYS.

Involucres few-flowered; pappus wanting; achenes linear, 8–10-striate. 108. FLAVERIA.

Bracts of the involucres spreading or reflexed.

Leaves not decurrent on the stem; tubes of the disk-flowers moderately long. 109. DUGALDIA.

Leaves decurrent on the stem; tubes of the disk-corollas very short or reduced to a ring. 110. HELENIUM.

2. Receptacle with bristle-like chaffs.

Involucral bracts spreading or reflexed. 111. GAILLARDIA.

Involucral bracts erect. 101. CHAENACTIS.

Tribe 8. TAGETEAE.

Bracts of the involucres more or less united; style-branches of the disk-flowers elongate.

Bracts of the involucres united only at the base; style-branches with conical tips, squamellae of the pappus many-aristate. 112. BOEBERA.

Bracts of the involucres united into a cup; style-branches obtuse. 113. THYMOPHYLLA.

Bracts of the involucres distinct; style-branches very short, obtuse, without an appendage. 114. PECTIS.

Tribe 9. ANTHEMIDEAE.

Receptacle chaffy.

Achenes flattened; involucres campanulate or obovoid, small; ligules short and broad. 115. ACHILLEA.

Achenes terete, at least not flattened; involucres hemispherical, large; ligules elongate.

Ray-flowers fertile; paleae of the receptacle membranous, subtending all the flowers. 116. ANTHEMIS.

Ray-flowers neutral; paleae of the receptacle subulate, stiff, subtending only the inner disk-flowers. 117. MARUTA.
Receptacle naked or merely pubescent.
Heads radiate; achenes 5–10-ribbed all around.
Ligules white, flat, spreading, longer than the disk-corollas. 119. LEUCANTHEMUM.
Ligules yellow, concave, erect, not longer than the disk-flowers. 120. TANACETUM.
Heads in ours discoid; achenes 2–5-ribbed.
Anthers obtuse.
Heads solitary, peduncled; flowers in our species all alike (the ray-flowers found in other species lacking). 118. CHAMOMILLA.
Heads in contracted panicles or glomerules, or in one species solitary; flowers of two kinds, the marginal pistillate, but without ligules. 121. SPHAEROMERIA.
Anthers with pointed tips; heads racemose, rarely solitary; marginal pistillate flowers without ligules.
Plants spiny; achenes and corollas cobwebby. 122. PICROTHAMNUS.
Plants not spiny; achenes not cobwebby. 123. ARTEMISIA.

Tribe 10. SENECIONEAE.

Plants scapiferous, dioecious or nearly so, with large basal leaves appearing after flowering; hermaphrodite flowers usually sterile. 124. PETASITES.
Plants not scapiferous; not dioecious; disk-flowers hermaphrodite, fertile.
Involucres of many or several bracts.
Involucres lax, of commonly much overlapping or unequal bracts.
Low annual herbs, with alternate leaves.
Heads discoid; receptacle flat; corollas with very short tube. 126. PSATYROTES.
Heads radiate; receptacle conical; disk-flowers with long tube. 125. CROCIDIUM.
Suffrutescent perennial, with opposite leaves; heads radiate. 127. HAPLOESTES.
Involucres of connivent erect herbaceous equal bracts, with or without smaller calyculate ones below.
Leaves mostly opposite; pappus of a single series of rigid bristles. 128. ARNICA.
Leaves alternate; pappus of numerous soft bristles. 129. SENECIO.
Involucres of 4–6 firm concave erect and strongly overlapping bracts; shrubs with alternate leaves and discoid heads. 130. TETRADYMIA.

Tribe 11. CYNAREAE.

Achenes attached by the very base; flowers all alike or nearly so; hermaphrodite.
Leaves not prickly; filaments glabrous; style-branches slender, free.
Involucre globose; bracts subulate, spine- or awn-like, spreading, hooked at the tip. 131. ARCTIUM.
Involucre oblong or obovoid; bracts appressed, muticous. 132. SAUSSUREA.
Leaves more or less prickly; filaments bearded or papillose, rarely glabrous; style-branches more or less united into a cylindrical body with a hair-ring below.
Receptacle densely bristly; pappus plumose. 133. CIRSIUM.
Receptacle deeply honeycombed, scarcely bristly; pappus not plumose. 134. ONOPORDON.
Achenes obliquely attached by one side; marginal flowers usually neutral, with enlarged oblique corollas. 135. CENTAUREA.

1. **VERNÒNIA** Schreb. IRON-WEED.

Leaves ovate-lanceolate, pinnately veined; bracts obtuse or acute. 1. *V. corymbosa.*
Leaves linear or lance-linear; lateral veins indistinct; bracts short-acuminate. 2. *V. marginata.*

2. **HOFMEISTÈRIA** Walp. 1. *H. pleuriseta.*

3. **EUPATÒRIUM** L. JOE-PYE WEED, THOROUGHWORT, BONESET, WHITE SNAKE-ROOT.

Leaves verticillate in whorls of 3's; flowers pink or rose-colored.
Leaf-blades lanceolate, acuminate, strongly reticulate and rugose. 1. *E. Bruneri.*
Leaf-blades broadly ovate, acute, neither strongly reticulate nor rugose. 2. *E. maculatum.*
Leaves opposite; flowers white or slightly tinged with pink.
Achenes hispidulous on the angles.
Bracts unequal in length, distinctly ribbed only towards the base. 3. *E. texense.*
Bracts essentially equal in length, strongly ribbed to near the apex. 4. *E. arizonicum.*
Achenes merely glandular-puberulent or glabrate. 5. *E. occidentale.*

4. **COLEOSÁNTHUS** Cass.

Leaf-blades ovate-cordate or deltoid.
Leaves subsessile or short-petioled, ovate, veiny, spinulose-toothed, acuminate; bracts firm-chartaceous, 3–6 mm. wide. 1. *C atractyloides.*

Leaves slender-petioled, not spinulose-toothed; bracts thin, 2 mm. wide or less.
Heads 30–50-flowered.
Leaves thin, minutely puberulent; their teeth usually broadly triangular, acute; peduncles usually longer than the heads. 2. *C. grandiflorus.*
Leaves thicker, densely scabrous-pubescent, veiny, their teeth rounded-ovate, obtuse or mucronate. 3. *C. umbellatus.*
Heads 9–25-flowered.
Tips of the bracts not spreading; leaf-blades 2–5 cm. long.
Leaves distinctly petioled; blades subcordate, 2–5 cm. long.
Leaves firm, crenate-dentate. 4. *C. albicaulis.*
Leaves thin, crenate. 5. *C. tener.*
Leaves short-petioled; blades lanceolate, 1–4 cm. long. 6. *C. brachyphyllus.*
Tips of the bracts squarrose-spreading; leaf-blades less than 1 cm. long.
Leaves on the peduncles many, passing into the bracts; inner bracts much longer than the outer ones; upper parts of the plant velutinous and glandular.
Stem and pedicels glandular-villous; head about 13 mm. high, 20–24-flowered; achenes 4–4.5 mm. long. 7. *C. microphyllus.*
Stem lanulose; heads about 11 mm. high, about 1–8-flowered; achenes about 3.5 mm. long. 8. *C. Watsonii.*
Leaves on the peduncles few; bracts gradually increasing in length upwards; plant scabrous-puberulent. 9. *C. scaber.*
Leaves linear or oblong, sessile.
Heads 30–40-flowered.
Achenes glandular; bracts comparatively firm. 10. *C. oblongifolius.*
Achenes hispidulous on the angles, not glandular; bracts thin. 11. *C. linifolius.*
Heads 3–5-flowered. 12. *C. longifolius.*

5. KÙHNIA L. False Boneset.

Leaves oblong or lanceolate, 3-ribbed, more or less toothed.
Leaves densely puberulent beneath.
Inner bracts abruptly acute or cuspidate. 1. *K. glutinosa.*
Inner bracts gradually acuminate. 2. *K. Hitchcockii.*
Leaves glabrous or nearly so beneath. 3. *K. reticulata.*
Leaves linear, 1-ribbed, entire. 4. *K. leptophylla.*

6. LACINIÀRIA Hill. Blazing Star, Button Snake-root.

Pappus plumose.
Heads 15–60-flowered; corolla-lobes hairy within. 1. *L. squarrosa.*
Heads 4–6-flowered; corolla-lobes glabrous within. 2. *L. punctata.*
Pappus merely barbellate.
Heads few, hemispheric, 15–45-flowered.
Heads in a short raceme-like or corymbiform inflorescence; bracts obovate, with a dark rose-purple laciniate apex; leaves usually glabrous. 3. *L. ligulistylis.*
Heads in a long spike-like inflorescence; bracts spatulate or obovate-oblanceolate, with a pale merely erose apex; leaves usually hispidulous or crisp-hairy. 4. *L. aspera.*
Heads oblong, 3–15-flowered, numerous in a long spike.
Bracts obtuse, appressed. 5. *L. spicata.*
Bracts acute, their tips spreading. 6. *L. pycnostachya.*

7. GUTIERRÈZIA Lag. Brown-weed.

Disk- and ray-flowers in the head 4–7 each.
Surface of the leaves marked with large dots, each bordered by a hyaline scale. 1. *G. lepidota.*
Surface of the leaves not lepidote, either puberulent or glabrous.
Axils of the leaves with fasciculate branches. 2. *G. fasciculata.*
Axils of the leaves without fasciculate branches.
Plant ligneous only at the short persistent caudex.
Leaves linear, usually 1.5–4 mm. wide.
Involucres oblong-turbinate, over 5 mm. high; outer bracts lanceolate; stems 3–4 dm. high. 3. *G. scoparia.*
Involucres campanulate, somewhat turbinate at the base, less than 5 mm. high; bracts ovate; stems 1–2 dm. high. 4. *G. diversifolia.*
Leaves linear-filiform, less than 1 mm. wide.
Ligules of the rays nearly as long as the involucre. 5. *G. filifolia.*
Ligules of the rays about half as long as the involucre.
Heads usually peduncled and solitary at the ends of the branches. 6. *G. divaricata.*
Heads usually subsessile in clusters of 3–4 at the ends of the branches.
Plant low, 1–2 dm. high; branches green; leaves 1–2 cm. long. 7. *G. juncea.*
Plants 2–5 dm. high; branches with straw-colored or gray bark; leaves 3–4 cm. long. 8. *G. Sarothrae.*
Plant shrubby.
Involucres elongate, clavate-turbinate, 2–3 mm. wide; bracts oblong. 9. *G. longifolia.*
Involucres campanulate, only slightly turbinate at the base, 3–4 mm. wide; outer bracts ovate or obovate. 10. *G. linearis.*
Disk- and ray-flowers in the head only 1–2 each. 11. *G. glomerella.*

8. AMPHIPÁPPUS T. & G. 1. *A. Fremontii.*

9. GRINDÈLIA Willd. GUM-PLANT, RESIN-WEED.

Involucres not viscid. 1. *G. platylepis.*
Involucres more or less viscid.
Leaves all entire, the basal ones 3–4 dm. long; bracts narrowly linear-lanceolate, the outer nearly filiform, rather thin. 2. *G. oregana.*
Leaves, at least the basal ones, more or less dentate, the latter less than 2 dm. long; bracts lanceolate, with thick, rather fleshy tips.
Heads radiate.
Pappus-awns apparently smooth; barbules seen only under a compound microscope.
Tips of the outer bracts spreading, none reflexed.
Stem-leaves serrate. 3. *G. decumbens.*
Stem-leaves laciniate. 4. *G. laciniata.*
Tips of the bracts squarrose, those of the outer ones strongly reflexed.
Stem-leaves oval, ovate, or ovate-oblong with a broad base.
Leaves bluish green, spinulose-dentate; heads very broad and flat, its bracts broad and even the squarrose tips flattened. 5. *G. texana.*
Leaves yellowish green, merely dentate; heads hemispherical, its bracts narrow and with terete squarrose tips. 6. *G. squarrosa.*
Stem-leaves oblanceolate, rarely oblong.
Pappus-awns scarcely longer than the achenes, curved and twisted.
Squarrose tips of the bracts short; leaves subentire. 7. *G. integerrima.*
Squarrose tips of the bracts long and slender; leaves serrate, with spreading teeth. 8. *G. Brownii.*
Pappus-awns decidedly longer than the achenes, straight.
Leaves all finely serrate, dentate or subentire.
Leaves finely and closely serrate. 9. *G. serrulata.*
Leaves rather remotely dentate or subentire. 10. *G. perennis.*
Leaves coarsely toothed, the basal ones sublaciniate. 11. *G. subincisa.*
Pappus-bristles distinctly barbellate; barbules distinctly seen with a common pocket-lens.
Stems tall, 4–8 dm. high, usually solitary; stem-leaves broadly oblong or obovate; bracts broad, only the outer ones squarrose-reflexed. 12. *G. erecta.*
Stems low, about 3 dm. high, usually several from the base; stem-leaves oblanceolate or oblong; all bracts squarrose. 13. *G. subalpina.*
Heads discoid.
Stem-leaves oval or obovate. 14. *G. inornata.*
Stem-leaves oblanceolate or oblong.
Outer bracts strongly recurved, the inner not squarrose. 15. *G. fastigiata.*
All bracts squarrose.
Bracts long and loose, but not strongly recurved. 16. *G. aphanactis.*
Bracts short, strongly recurved-curled. 17. *G. columbiana.*

10 VANCLÈVEA Greene. 1. *V. stylosa.*

11. ACAMPTOPÁPPUS A. Gray. 1. *A. sphaerocephalus.*

12. CHRYSÓPSIS Nutt. GOLDEN ASTER.

Heads radiate.
Involucres strigose.
Heads sessile or subsessile, subtended by foliage-leaves.
Leaves narrowly linear-oblanceolate, hirsute. 1. *C. angustifolia.*
Leaves oblanceolate, obovate, elliptic, or lanceolate, strigose at least when young, except in *C. imbricata.*
Plant about 1 dm. high or less; heads usually solitary.
Involucres 5–8 mm. broad; leaves less than 1 cm. long. 2. *C. caespitosa.*
Involucres 10–12 mm. broad; leaves 2–3 cm. long. 3. *C. alpicola.*
Plant 2–6 dm. high; heads corymbose.
Leaves oblong or lanceolate, decidedly acute, those subtending the heads narrowly linear. 4. *C. foliosa.*
Leaves oblanceolate or obovate, those of the inflorescence elliptic or oval.
Disk of the heads about 15 mm. broad; leaves strigose.
Inner bracts with subulate, usually brownish and spreading tips. 5. *C. caudata.*
Inner bracts merely acute. 6. *C. amplifolia.*
Disk of the heads 10–12 mm. broad; leaves hirsutulous. 7. *C. imbricata.*
Heads peduncled, naked or rarely subtended by one small leaf.
Plant less than 1 dm. high; heads solitary at the ends of the branches. 8. *C. depressa.*
Plant 2–3 dm. high; heads more or less corymbose.

Heads long-peduncled; peduncles 2–7 cm. long. 9. *C. pedunculata.*
Heads short-peduncled.
Plant finely silvery-canescent, scarcely at all hirsute. 10. *C. mollis.*
Plant usually grayish-green, conspicuously hirsute on the stem; leaves hirsute-ciliate towards the base.
Most of the leaves sessile.
Leaves oblanceolate or obovate, obtuse or merely apiculate; disk of the heads 15–20 mm. broad. 11. *C. villosa.*
Leaves narrowly oblanceolate, decidedly acute; disk 10–12 mm. broad. 12. *C. hirsutissima.*
Most of the leaves distinctly petioled; disk 10–12 mm. broad.
Involucre more than 1 cm. high and broad; leaves oblanceolate. 13. *C. Bakeri.*
Involucre scarcely 1 cm. high and broad; leaves linear-oblanceolate. 14. *C. floribunda.*
Involucre hirsute or both hirsute and resinous-granuliferous.
Leaves lanceolate, acute or acuminate, sessile; plant densely hirsute with long white hairs. 15. *C. barbata.*
Leaves oblanceolate, oblong, obovate or oval; plant not conspicuously long-hairy.
Involucre densely hirsute, scarcely at all resinous-granuliferous.
Leaves short, 1–2 cm. long, obovate, nearly all sessile. 16. *C. Butleri.*
Leaves oblanceolate, the lower petioled.
Plant 1–2 dm. high; heads usually solitary and sessile. 17. *C. pumila.*
Plant 2–3 dm. high; heads peduncled and corymbose.
Disk of the heads 8–10 mm. broad; leaves densely hirsute, not resinous, only the lower petioled. 18. *C. columbiana.*
Disk of the heads 12–18 mm. wide; leaves distinctly resinous-granuliferous, nearly all petioled. 19. *C. grandis.*
Involucre sparingly hirsute, copiously resinous-granuliferous.
Upper leaves obovate, oval, only rarely oblong or broadly oblanceolate, sessile.
Heads sessile, subtended by oblong or obovate leaves.
Leaves numerous, ascending, 3–5 cm. long; involucre about 1 cm. high. 20. *C. resinolens.*
Leaves scattered, spreading, 1–2 cm. long; involucres 8–9 mm. high. 21. *C. fulcrata.*
Heads peduncled, naked or subtended by small linear leaves.
Leaves densely hispid, not conspicuously granuliferous. 22. *C. horrida.*
Leaves conspicuously granuliferous, only sparingly hispidulous. 23. *C. viscida.*
Upper leaves as well as the lower oblanceolate, most of them petioled.
Leaves broadly oblanceolate; heads peduncled.
Leaves decidedly hairy, sparingly granuliferous.
Stem simple to near the top. 24. *C. asprella.*
Stem profusely branched. 14. *C. floribunda.*
Leaves sparingly hairy, conspicuously granuliferous. 25. *C. hispida.*
Leaves narrowly linear-oblanceolate; heads subsessile. 26. *C. stenophylla.*
Heads discoid; leaves lanceolate, hispid-ciliate, otherwise glabrous, minutely granuliferous. 27. *C. oregana.*

13. **ERICAMÈRIA** Nutt.

Heads radiate; bracts not in distinct ranks.
Leaves linear-filiform or linear-oblanceolate.
Leaves linear-oblanceolate, rarely 15 mm. long, curved; flowers yellow. 1. *E. nana.*
Leaves linear-filiform, mostly 15–20 mm. long, divaricate; flowers ochroleucous. 2. *E. resinosa.*
Leaves oblong-oblanceolate, short-cuspidate. 3. *E. cervina.*
Heads discoid; bracts distinctly 5-ranked. 4. *E. paniculata.*

14. **CHRYSOTHÁMNUS** Nutt. Rabbit Brush.

Bracts of the involucre acuminate.
Achenes glabrous.
Leaves oblanceolate or spatulate, scabrous-puberulent; plant less than 2 dm. high. 1. *C. depressus.*
Leaves narrowly linear, slightly tomentulose or glabrous.
Bracts thick, strongly carinate, glabrous. 3. *C. pulchellus.*
Bracts thin, not strongly carinate, arachnoid-ciliate. 2. *C. Bigelovii.*
Achenes pubescent, usually strigose.
Bracts 4–6 in each vertical row. 3. *C. pulchellus.*
Bracts 2–3 in each vertical row.
Outer bracts long-acuminate, produced and more or less foliaceous.
Leaves linear, more or less distinctly 3-nerved. 4. *C. Parryi.*
Leaves very narrowly linear, 1-nerved.
Leaves and branches green, or the latter slightly tomentulose. 5. *C. attenuatus.*

Leaves and branches white-tomentose.
Leaves mostly erect, the upper reduced, not exceeding the heads. 6. *C. Newberryi.*
Leaves arcuate-spreading, the upper longer than the heads. 7. *C. Howardii.*
Outer bracts short, neither produced nor foliaceous.
Heads 5–8 mm. high; bracts thin, glabrous.
Leaves 2–3 cm. long, over 1 mm. wide, light green. 8. *C. Greenei.*
Leaves 1–2 cm. long, less than 1 mm. wide, dark green. 9. *C. filifolius.*
Heads about 1 cm. long; bracts thicker.
Leaves less than 1 mm. wide; bracts glabrous. 10. *C. albidus.*
Leaves 1 mm. broad or broader; bracts arachnoid-ciliate.
Leaves 1–2 cm. long; involucre lanate as well as arachnoid. 11. *C. collinus.*
Leaves 3–6 cm. long; involucre somewhat viscid, merely arachnoid-ciliate on the margin. 12. *C. wyomingensis.*
Bracts not acuminate.
Bracts 6–7 in each vertical row. 13. *C. formosus.*
Bracts 3–5 in each vertical row.
Achenes pubescent; bracts acute or obtuse.
Branches, at least when young more or less whitened with a pannose tomentum; style-appendages longer than the stigmatic portion; corolla 7–12 mm. long.
Bracts and mature leaves perfectly glabrous.
Bracts ovate, or the outer triangular; involucre about half as long as the flowers. 14. *C. virens.*
Bracts lanceolate to linear; involucre more than half as long as the flowers.
Leaves nearly erect or strongly ascending, straight, 1–2 mm. wide. 15. *C. graveolens.*
Leaves scarcely 1 mm. wide.
Leaves spreading or reflexed, more or less falcate; lobes of the corollas lanceolate, mostly acute. 16. *C. patens.*
Leaves erect, about 0.5 mm. wide; lobes of the corolla ovate, obtuse, about 0.5 mm. long, erect in age. 17. *C. pinifolius.*
Bracts erose-ciliate on the margin, or tomentose, or both.
Inflorescence elongate-thyrsoid. 18. *C. concolor.*
Inflorescence corymbiform, flat or round-topped.
Bracts lanceolate, acute; leaves less than 2.5 mm. wide.
Bracts more or less erose-ciliate on the thin margins.
Mature leaves glabrous or nearly so, about 1 mm. wide, erect. 19. *C. oreophilus.*
Mature leaves more or less densely white-tomentose; bracts lanceolate.
Leaves 1 mm. wide or less, spreading. 20. *C. plattensis.*
Leaves 1–2.5 mm. wide.
Bracts narrow, linear-lanceolate, strongly carinate, almost glabrous, except the erose-ciliate margins. 21. *C. pulcherrimus.*
Bracts usually broader, more or less densely tomentose and viscid as well as ciliate.
Stems equally leafy throughout; leaves all alike, strongly ascending; bracts strongly carinate. 22. *C. frigidus.*
Stems more leafy towards the ends; upper leaves much shorter; bracts slightly carinate. 23. *C. pallidus.*
Bracts not at all ciliate on the thicker margin, but white-tomentose on the back.
Bracts scarcely carinate; older branches not densely and thickly woolly. 24. *C. speciosus.*
Bracts strongly carinate; older branches densely and thickly woolly. 25. *C. nauseosus.*
Bracts elliptical, nearly glabrous, the thinner ones obtuse; leaves 3–4 mm. wide. 26. *C. salicifolius.*
Branches without tomentum; style-appendages shorter than the stigmatic portion; corolla 5–7 mm. long.
Leaves and the white or straw-colored stem glabrous or nearly so, except the hispidulous-ciliate margins of the former.
Leaves narrowly linear, 2 mm. wide or less.
Bracts neither strongly carinate nor with conspicuous green tips.
Leaves less than 1 mm. wide, 1-nerved.
Bracts linear, the innermost rounded at the apex. 27. *C. stenophyllus.*
Bracts ovate-lanceolate, acute. 28. *C. laricinus.*
Leaves 1–2 mm. wide, 3-nerved; bracts lanceolate. 29. *C. pumilus.*
Bracts strongly carinate and with conspicuous green tips.
Bracts acute; upper leaves not much reduced. 30. *C. elegans.*

Bracts obtuse; upper leaves much reduced. 42. *C. turbinatus.*
Leaves linear to lance-linear or oblanceolate, 2–8 mm. wide.
Bracts linear, oblong, or lanceolate.
Bracts at least the outer ones with thick green tips. 31. *C. linifolius.*
Bracts comparatively thin, not green-tipped.
Bracts linear-lanceolate, very acute. 32. *C. stenolepis.*
Bracts oblong or lanceolate, the inner obtuse.
Involucre not viscid; leaves hispidulous ciliate-dentate. 33. *C. glaucus.*
Inflorescence densely viscid; leaves minutely denticulate. 34. *C. viscidiflorus.*
Bracts ovate, oval, or the inner broadly elliptic, abruptly short-cuspidate. 35. *C. latifolius.*
Leaves and stems decidedly puberulent.
Leaves 3–6 mm. wide, rarely twisted. 36. *C. lanceolatus.*
Leaves 1–2.5 mm. wide, usually twisted.
Leaves 3-nerved; inner bracts linear, acute; branches green or yellowish. 37. *C. puberulus.*
Leaves 1-nerved, thick; inner bracts spatulate-oblong, rounded at the apex; branches white. 38. *C. marianus.*
Achenes glabrous.
Bracts acutish; leaves filiform. 9. *C. filifolius.*
Bracts rounded at the apex; leaves linear.
Branches white-tomentose when young; corolla 7–10 mm. long.
Leaves linear, more or less involute; corolla-lobes deltoid-lanceolate. 39. *C. leiospermus.*
Leaves linear-oblanceolate, not involute; corolla-lobes linear-lanceolate. 40. *C. glareosus.*
Branches not tomentose; corolla 5–6 mm. long.
Plant glabrous.
Leaves linear-oblanceolate. 41. *C. Vaseyi.*
Leaves filiform, the upper much reduced. 42. *C. turbinatus.*
Plant decidedly puberulent; leaves narrowly linear. 38. *C. marianus.*

15. ISOCÒMA Greene.

Bracts acute, linear-lanceolate. 1. *I. pluriflora.*
Bracts obtuse or obtusish, linear, oblong, or oblanceolate.
Leaves 1-ribbed, the lower often toothed.
Plant herbaceous, except the suffruticose base; bracts comparatively thin. 2. *I. Wrightii.*
Plant shrubby; bracts much thickened, especially at the apex. 3. *I. acradenia.*
Leaves triple-nerved, entire. 4. *I. scopulorum.*

16. PRIONÓPSIS Nutt. 1. *P. ciliata.*

17. SIDERÁNTHUS Nutt. Iron Plant.

Leaves spinescent-toothed, not pinnatifid.
Heads discoid; perennials, with woody caudex.
Heads peduncled. 1. *S. grindelioides.*
Heads sessile. 2. *S. aberrans.*
Heads radiate; annuals.
Leaves oblanceolate, spinulose-tipped; plant more or less viscid. 3. *S. annuus.*
Leaves linear-oblanceolate, bristle-tipped; plant strigose. 4. *S. gracilis.*
Leaves pinnatifid; perennials, with a short woody base; achenes somewhat flattened.
Stem more or less floccose or cinereous, especially when young.
Plant cinereous pubescent, more or less glandular. 5. *S. australis.*
Plant more or less floccose, not at all glandular. 6. *S. spinulosus.*
Plant neither floccose nor cinereous.
Plant perfectly glabrous or sparingly glandular-puberulent. 7. *S. glaberrimus.*
Plant finely puberulent, or hispid.
Heads hemispheric; bracts slightly glandular. 8. *S. puberulus.*
Heads somewhat turbinate; bracts densely glandular-puberulent. 9. *S. turbinellus.*

18. PYRROCÒMA Nutt.

Heads apparently discoid, the sterile rays being concealed in the pappus.
Inner bracts recurved cuspidate. 1. *P. subsquarrosa.*
Bracts not recurved cuspidate.
Bracts oblong or oval; heads hemispheric.
Leaves and bracts more or less spinulose-toothed, the latter with a narrow scarious margin. 2. *P. carthamoides.*
Leaves and bracts not spinulose-toothed, the latter with a broad scarious erose margin.
Pappus sordid; plant almost glabrous. 3. *P. rigida.*
Pappus brownish red; plant villous. 4. *P. erythropappa.*
Bracts lanceolate; head campanulate-turbinate. 5. *P. Cusickii.*
Heads distinctly radiate.
Bracts except the innermost obtuse, obovate or oblong. 6. *P. crocea.*

Bracts mostly acute or acuminate.
Plant not glandular.
Heads large; disk 2 cm. or more in diameter; bracts in about 3 series.
Bracts almost of the same length. 7. *P. insecticruris*
Outer bract decidedly shorter.
Involucre and upper part of stem decidedly villous; bracts wholly foliaceous.
Bracts oblanceolate, abruptly acute; achenes hirsute. 8. *P. Clementis*
Bracts lanceolate, long-acute; achenes glabrous. 9. *P. villosa.*
Involucral bracts almost glabrous except the ciliate margins, chartaceous at the base with foliaceous tips.
Leaves and stem glabrous, or the latter slightly villous.
Basal leaf-blades broadly lanceolate. 10. *P. lapathifolia.*
Basal leaf-blades narrowly oblanceolate. 11. *P. integrifolia.*
Leaves hirtellous; stem hirsute-villous. 12. *P. scaberula.*
Heads smaller; disk less than 2 cm. in diameter.
Bracts in 2–3 unequal series.
Leaves 5–15 mm. wide; disk 1–2 cm. wide.
Inflorescence corymbiform; bracts long-acute. 13. *P. lanceolata.*
Inflorescence racemiform; bracts abruptly acute.
Stem and bracts more or less white-woolly. 14. *P. lagopus.*
Stem and bracts glabrous or nearly so. 15. *P. Vaseyi.*
Leaves 2–4 mm. wide; disk 1 cm. or less wide. 16. *P. tenuicaulis*
Bracts nearly of the same length.
Stem-leaves oblanceolate; bracts long-acuminate. 17. *P. acuminata.*
Stem-leaves lanceolate; bracts acute or short-acuminate.
Plant villous. 18. *P. inuloides.*
Plant, except the upper parts, glabrate in age. 19. *P. uniflora.*
Plant hirsute-villous, decidedly glandular. 20. *P. hirta.*

19. STENOTÓPSIS Rydb.

1. *S. interior.*

20. OONÓPSIS Greene.

Dwarf; stem less than 1 dm. high; heads 6–10 mm. high.
Plant more or less villous; leaves flat; heads radiate.
Heads 6–8 mm. high; leaves 1–3 cm. long, not exceeding the stem. 1. *O. multicaulis*
Heads 8–10 mm. high; leaves 4–8 cm. long, often overtopping the stem. 2. *O. argillacea.*
Plant glabrous; leaves involute; heads discoid. 3. *O. Engelmannii.*
Plant robust, 1.5–3 dm. high; heads 15–20 mm. high.
Heads discoid.
Heads clustered, 10–15 mm. high; achenes glabrous. 4. *O. Wardii.*
Heads solitary, 15 mm. high or more; achenes glandular. 5. *O. monocephala.*
Heads radiate. 6. *O. foliosa.*

21. MACRONÈMA Nutt.

Heads radiate; branches glandular, not tomentose.
Heads small, fastigiate-clustered; disk 5–8 mm. in diameter.
Leaves broadly obovate, mucronate-cuspidate. 1. *M. obovatum.*
Leaves oblanceolate, acute or pointed. 2. *M. Watsoni.*
Heads larger, solitary; disk 1 cm. or more in diameter.
Leaves oblanceolate, acute. 3. *M. suffruticosum.*
Leaves spatulate, obtuse or mucronate. 4. *M. grindelifolium.*
Heads discoid; branches white-tomentose.
Leaves oblong-oblanceolate.
Outer bracts linear to oblong, acute. 5. *M. discoideum*
Outer bracts broadly oblong, obtuse or mucronate. 6. *M. obtusum.*
Leaves linear. 7. *M. lineare.*

22. STENÒTUS Nutt.

Plant glabrous or puberulent; leaves firm and evergreen.
Leaves linear to filiform, 1 mm. wide. 1. *S. stenophyllus.*
Leaves mostly oblanceolate.
Bracts lanceolate, acute.
Plant puberulent.
Bracts in 3 series, broad, with broad scarious margins. 2. *S. acaulis.*
Bracts in 2 series, narrow, with narrow scarious margins. 3. *S. Andersonii.*
Plant glabrous, except the scabrous leaf-margins.
Bases of the basal leaves much enlarged, somewhat inflated and remaining for years on the short caudal branches; leaf-blades narrowly oblanceolate to linear.
Stem-leaves oblanceolate, 1–4 cm. long. 4. *S. caespitosus.*
Stem-leaves linear, 4–7 cm. long. 5. *S. falcatus.*
Bases of the basal leaves neither much enlarged nor persistent; leaf-blades broadly oblanceolate or spatulate. 6. *S. latifolius.*
Bracts oval or oblong, very obtuse. 7. *S. armerioides.*
Plant floccose; leaves softer, not evergreen. 8. *S. lanuginosus.*

23. TONÉSTUS A. Nels.

Basal leaves oblanceolate, spatulate, or oblong; bracts lanceolate or oblanceolate.
- Bracts acute; plants glandular or viscid.
  - Bracts lacerate or ciliate; stem-leaves linear or linear-lanceolate, long-ciliate. 1. *T. laceratus.*
  - Bracts neither lacerate nor ciliate; stem-leaves oblanceolate, not ciliate. 2. *T. Lyallii.*
- Bracts obtuse; plant soft-pubescent or glabrate, scarcely viscid. 3. *T. pygmaeus.*

Leaves and bracts linear. 4. *T. linearis.*

24. OREOCHRÝSUM Rydb. MOUNTAIN GOLD. 1. *O. Parryi.*

25. SOLIDÀGO L. GOLDENROD.

Leaves glabrous or slightly pubescent along the veins and on the margins.
- Leaves not triple-veined; branches of the inflorescence not recurved-spreading; heads not secund.
  - Bracts of the inflorescence lanceolate or linear-lanceolate, acute or acuminate.
    - Leaves ciliate at the base. I. VIRGA-AUREAE.
    - Leaves not ciliate at the base. IV. GLABERRIMAE.
  - Bracts of the inflorescence oblong or linear-oblong, obtuse.
    - Leaves, at least the basal ones, toothed; stem-leaves few; plants 1–4 dm. high. II. HUMILES.
    - Leaves all entire: stem very leafy, 4–8 dm. high. III. SPECIOSAE.
- Leaves triple-veined; heads more or less secund, on recurved-spreading branches (except usually in Nos. 9 and 11).
  - Plants slender, not very leafy, 2–4 dm. high; stem-leaves narrowly oblanceolate or linear. IV. GLABERRIMAE
  - Plant tall, leafy, 4–10 dm. high.
    - Stem-leaves lanceolate. V. SEROTINAE.
    - Stem-leaves obovate. VI. RADULAE.

Leaves densely canescent.
- Bracts not squarrose.
  - Leaves lanceolate; bracts narrowly linear-lanceolate. V. SEROTINAE.
  - Leaves, at least the lower ones, oblanceolate or obovate. VII. INCANAE.
- Bracts squarrose; leaves numerous, entire, elliptic. VIII. WARDIANAE.

I. VIRGA-AUREAE.

Plants low and slender, 1–3 dm. high; inflorescence corymbiform; branches with a single or a few corymbose heads.
- Heads 7–9 mm. high; inner bracts linear-lanceolate, of about the same length as the flowers and pappus; plant 2–3 dm. high. 1. *S. scopulorum.*
- Heads 5–7 mm. high; bracts lanceolate, the inner shorter than the flowers and the pappus; plant usually less than 2 dm. high. 2. *S. ciliosa.*

Plants stout, 3–4 dm. high; inflorescence paniculate, but narrow; branches racemiform; heads 7–9 mm. high.
- Basal leaves broadly oblanceolate, acute; stem pubescent. 3. *S. rubra.*
- Basal leaves narrowly oblanceolate, obtuse; stem glabrous up to the inflorescence. 4. *S. laevicaulis.*

II. HUMILES.

Plant low, 1–1.5 dm. high; inflorescence with few heads, short, congested. 5. *S. decumbens*

Plant taller, 2–4 dm. high; inflorescence with many heads, elongate.
- Leaves not ciliate; bracts oblong; inflorescence usually narrow. 6. *S. oreophila.*
- Leaves ciliate at the base; bracts linear; inflorescence open. 7. *S. dilatata.*

III. SPECIOSAE.

One species. 8. *S. pallida.*

IV. GLABERRIMAE.

Heads less than 5 mm. high; stem slender.
- Inflorescence decidedly viscid; leaves indistinctly triple-veined. 9. *S. viscidula.*
- Inflorescence not viscid; leaves distinctly triple-veined.
  - Plant glaucous; bracts thick, oblong, obtuse. 10. *S. glaucophylla.*
  - Plant not glaucous; bracts not thick, linear-lanceolate to oblong-lanceolate.
    - Inflorescence narrow, scarcely secund; bracts linear-lanceolate. 11. *S. missouriensis.*
    - Inflorescence usually open and more or less secund; bracts oblong-lanceolate. 12. *S. glaberrima.*

Heads 6–7 mm. high; stem stout. 13. *S. concinna.*

V. SEROTINAE.

Inflorescence narrowly rhombic in outline; branches ascending, almost straight, scarcely secund. 14. *S. elongata.*

Inflorescence broad; branches recurved-spreading, distinctly secund.
- Leaves green, sparingly pubescent or glabrous; pubescence scabrous, mostly confined to the margins and the veins.
  - Stem usually glabrous up to the inflorescence; leaves glabrous except on the margins and on the midveins.
    - Veins of the leaves glabrous; heads 5–6 mm. high, in a short panicle with strongly curved branches. 15. *S. serotina.*

Veins of the leaves pubescent below; heads 4–5 mm. high; panicle with long branches. 16. *S. salebrosa.*
Stem more or less pubescent.
Heads 5 mm. or more high; leaves pubescent. 17. *S. polyphylla.*
Heads about 4 mm. high; plant comparatively slender.
Leaves pubescent, at least on the veins. 18. *S. canadensis.*
Leaves glabrous, except the scabrous-ciliolate margins. 19. *S. serra.*
Leaves densely canescent, especially beneath.
Leaves usually broadly lanceolate.
Leaves scabrous above. 20. *S. dumetorum.*
Leaves softly puberulent on both sides. 21. *S. pruinosa.*
Leaves linear-lanceolate, finely and rather softly canescent on both sides, more or less yellowish gray. 22. *S. gilvocanescens.*

VI. RADULAE.

One species. 23. *S. Garrettii.*

VII. INCANAE.

Plant low, 1–2 dm. high; inflorescence corymbiform; branches not secund.
Bracts oval to oblong, obtuse. 24. *S. nana.*
Bracts lanceolate, acute. 25. *S. nivea.*
Plants tall, 2–6 dm. high; inflorescence narrow, or if open with distinctly secund branches.
Bracts oblong or linear, obtuse; stem-leaves scarcely triple-veined; inflorescence usually narrow.
Stem-leaves oblanceolate. 26. *S. pulcherrima.*
Stem-leaves spatulate or broadly oblanceolate. 27. *S. radulina.*
Bracts lanceolate or ovate, acute; stem-leaves distinctly triple-veined; inflorescence usually more open.
Stem-leaves oblanceolate or elliptic; bracts lanceolate. 28. *S. trinervata.*
Stem-leaves obovate, thick; bracts ovate. 29. *S. mollis.*

VIII. WARDIANAE.

One species. 30. *S. Wardii.*

26. PETRADÒRIA Greene. ROCK GOLDENROD. 1. *P. pumila.*

27. EUTHÀMIA Nutt. BUSHY OR FRAGRANT GOLDENROD.

Outer bracts broader than the inner, which are obtuse. 1. *E. camporum.*
Outer bracts narrow, all acute; lateral ribs of the leaves rather prominent. 2. *E. occidentalis.*

28. OLIGONEÙRON Small. ROUGH GOLDENROD. 1. *O. canescens.*

29. MONÓPTILON T. & G. 1. *M. bellidiforme.*

30. TOWNSÉNDIA Hook.

Bracts acuminate.
Caulescent biennials or short-lived perennials.
Stems spreading, with branches from the base, which surpass them in length. 1. *T. grandiflora.*
Stems erect or nearly so, simple or with short branches above.
Stems over 3 dm. high, generally branched; basal leaves oblanceolate.
Involucre 1.5–2 cm. broad, naked. 2. *T. eximia.*
Involucre 2–3 cm. broad, generally subtended by leaves. 3. *T. Vreelandii.*
Stems 1–2 dm. high, generally simple and monocephalous, sometimes several from one root; basal leaves spatulate. 4. *T. Parryi.*
Acaulescent perennials, depressed, monocephalous.
Plant pilose or hirsute. 5. *T. alpina.*
Plant arachnoid-lanuginose. 6. *T. condensata.*
Bracts acute or obtuse.
Plant with evident leafy stems.
Stems 5–20 cm. high; mostly annuals and biennials.
Pappus of disk- and ray-flowers elongate bristles.
Leaves linear or oblanceolate; pappus of the rays nearly as long as that of the disk-flowers. 7. *T. florifer.*
Leaves spatulate; pappus of the ray-flowers much shorter than that of the disk-flowers. 8. *T. ambigua.*
Pappus of the rays reduced to a crown of short squamellae.
Bracts of the involucre in 3 series; pubescence of the stem appressed: leaves linear. 9. *T. Fendleri.*
Bracts in 2 series; pubescence of the stem not strictly appressed; earlier leaves spatulate. 10. *T. strigosa.*
Stem usually evident, but short, 1–5 cm. long; mostly cespitose perennials.
Leaves more or less cinereous.
Outer bracts rounded-obtuse at the apex; achenes almost glabrous. 11. *T. montana.*
Outer bracts acute; achenes pubescent.
Heads distinctly peduncled; hairs of the achenes not glochidiate-capitellate. 12. *T. scapigera.*

Heads subsessile; hairs of the achenes glochidiate-capitellate.
Stem-leaves oblanceolate or linear.
Pappus of the rays of bristles one-third to one-half as long as those of the disk-flowers; ray-flowers glandular-puberulent outside. 13. *T. incana.*
Pappus of the rays reduced to a crown of short squamellae; ray-flowers glabrous. 10. *T. strigosa.*
Leaves all decidedly spatulate; pappus-bristles of ray- and disk-flowers all alike. 14. *T. arizonica.*
Leaves glabrous or nearly so. 15. *T. glabrella.*
Plant acaulescent; heads sessile among the rosulate leaves.
Plant not lanate.
Plant glabrate, cinereous only when young; leaves oblanceolate or spatulate.
Bracts obtuse; ray-flowers with very short pappus. 16. *T. Rothrockii.*
Bracts acute; pappus of disk- and ray-flowers alike, of long bristles.
Leaves glabrous above. 17. *T. Wilcoxiana.*
Leaves strigose on both sides.
Head 12–15 mm. high; pappus twice as long as the achenes; bracts lanceolate. 18. *T. intermedia.*
Head less than 1 cm. high; pappus a little longer than the achenes; bracts linear. 19. *T. leptotes.*
Plant permanently cinereous; leaves linear or linear-oblanceolate. 20. *T. exscapa.*
Plant lanate. 21. *T. spathulata.*

31. **BRACHYÁCTIS** Ledeb.

Bracts oblong or oblong-linear, obtuse. 1. *B. frondosa.*
Bracts narrowly linear, acute. 2. *B. angusta.*

32. **EREMIÁSTRUM** A. Gray. 1. *E. bellioides.*

33. **LEUCOSÝRIS** Greene. Spiny Aster. 1. *L. spinosa.*

34. **XYLORRHÍZA** Nutt. Holly-leaved Aster.

Leaves not spinulose-toothed.
Glabrous or nearly so. 1. *X. glabriuscula.*
More or less villous.
Bracts only slightly unequal, linear-lanceolate.
Leaves linear-oblanceolate, acute. 2. *X. villosa.*
Leaves spatulate, cuspidate. 3. *X. venusta.*
Bracts very unequal, the outer ovate or ovate-lanceolate. 4. *X. Parryi.*
Leaves spinulose-toothed.
Plant 1 dm. or less high, with a short caudex.
Ligules 8–10 mm. long. 5. *X. coloradensis.*
Ligules 15–20 mm. long. 6. *X. Brandegei.*
Plant tall, shrubby. 7. *X. lanceolata.*

35. **HERRÍCKIA** Woot. & Standl. 1. *H. horrida.*

36. **UNÀMIA** Greene. Sneezewort Aster.

Inner bracts ovate-lanceolate, acute, the outer lance-subulate; ligules white. 1. *U. alba.*
Inner bracts oblong or elliptic, obtuse or rounded at the apex; ligules yellowish, the outer lanceolate, obtusish. 2. *U. lutescens.*

37. **EUCÈPHALUS** Nutt.

Bracts all thin and acute, villous-ciliate on the margins; style-appendages subulate.
Leaves ovate-oblong or broadly lanceolate; heads 10–15 mm. high. 1. *E. Engelmannii.*
Leaves lanceolate; heads 8–10 mm. high. 2. *E. elegans.*
Bracts firmer, merely ciliolate, the outer obtuse.
Bracts with more or less foliaceous tips; involucre and branches of inflorescence decidedly glandular, the leaves less so. 3. *E. wasatchensis.*
Bracts without foliaceous tips; plant not glandular or very rarely so.
Inner bracts acute. 4. *E. glaucus.*
All bracts obtuse or rounded and mucronate at the apex. 5. *E. formosus.*

38. **ÁSTER** (Tourn.) L. Aster.

Involucres and peduncles glandular.
Leaves ovate, oval, or the lower obovate, sharply and coarsely serrate; bracts well imbricate, very unequal, broadly lanceolate, not thick. I. Conspicui.
Leaves lanceolate, oblong, or linear, entire or, if slightly toothed, bracts linear-lanceolate, almost equal in length.
Lower leaves petioled.
Stems stout, 3–5 dm. high, leafy; bracts lanceolate, firm, ascending.
Stem-leaves lanceolate to ovate; disk of heads 1.5–2 cm. broad. II. Integrifolii.
Stem-leaves narrowly linear; disk of heads about 1 cm. broad. III. Pauciflori.

Stem low, slender, few-leaved, 0.5–2 dm. high; bracts narrowly linear-lanceolate, with reflexed tips. IV. KINGIANI.
Leaves all sessile.
Bracts narrowly linear, almost equal in length, attenuate.
Leaves broadly lanceolate or oblong. V. MODESTI.
Leaves linear. VI. CAMPESTRES.
Bracts thick, oblanceolate, well imbricate; leaves oblong or lanceolate. VII. OBLONGIFOLII.
Involucres and peduncles not glandular.
Outer bracts neither foliaceous nor equalling or surpassing the inner.
Bracts more or less pubescent on the back.
Bracts not bristle-pointed.
Heads solitary; plant less than 3 dm. high; leaves oblanceolate or the upper linear. VIII. ALPINI.
Heads corymbose or paniculate; plant over 3 dm. high.
Upper leaves more or less clasping and auricled at the base. IX. MOLLES.
Upper leaves neither auricled nor clasping.
Leaves obovate, broadly oblanceolate, oval or lanceolate, usually more or less toothed; bracts lanceolate, often tinged with purple. X. RADULINI.
Leaves narrowly oblanceolate or linear, entire; bracts linear or oblanceolate, green-tipped.
Pubescence villous. XI. ANDINI.
Pubescence hirsute or strigose. XII. GRISEI.
Bracts bristle-pointed, squarrose. XIII. MULTIFLORI.
Bracts glabrous, except the ciliate margins.
Bracts linear, oblong or lanceolate, all acute or acutish.
Lower leaves long-petioled; blades cordate or ovate (rarely broadly lanceolate), usually more or less serrate. XIV. SAGITTIFOLII.
Lower leaves oblanceolate, linear, or lanceolate.
Plants perfectly glabrous throughout.
Bracts whitish-coriaceous below and with a distinctly rhombic green tip above; upper leaves clasping. XV. LAEVES.
Bracts linear-subulate, green nearly throughout; leaves narrowly linear, not clasping. XVI. PORTERIANI.
Upper part of the stem and peduncles with at least pubescent lines.
Heads usually numerous in a leafy panicle or compound corymb.
Stem only with pubescent lines. XVII. SALICIFOLII.
Stem, at least above, pubescent on all sides. XVIII. LONCHOPHYLLI.
Heads few in a naked small corymb. XIX. OCCIDENTALES.
Bracts oblanceolate, the outer obtuse. XX. ADSCENDENTES.
Outer bracts foliaceous, equalling or surpassing the inner.
Heads rather numerous in an open leafy panicle. XXI. FULCRATI.
Heads few, in a usually simple, racemose, or corymbose inflorescence with nearly erect branches. XXII. FOLIOSI.

I. CONSPICUI.

One species. 1. *A. conspicuus.*

II. INTEGRIFOLII.

Stem almost glabrous below; auricles of the thinnish leaves small; bracts narrowly linear, lanceolate. 2. *A. integrifolius.*
Stem hirsute-villous throughout; auricles of the thick leaves broad; bracts oblong or lanceolate. 3. *A. amplexifolius.*

III. PAUCIFLORI.

One species. 4. *A. pauciflorus.*

IV. KINGIANI.

One species. 5. *A. Kingii.*

V. MODESTI.

Stem not hispid; heads distinctly peduncled; leaves slightly if at all auricled at the base, thin.
Stem, especially upwards, with scattered long silky hairs; leaves not auricled, usually somewhat hairy. 6. *A. major.*
Stem glandular-puberulent or glabrous below, not long-hairy.
Leaves and lower part of the stem glabrous, the former not auricled. 7. *A. modestus.*
Leaves short-pubescent, somewhat scabrous above; stem usually puberulent throughout; leaves with small auricles. 8. *A. Sayianus.*
Stem short-hispid; heads crowded, often subsessile, subtended by bract-like leaves; leaves thick, strongly auricled at the base. 9. *A. Novae-Angliae.*

VI. CAMPESTRES.

One species. 10. *A. campestris.*

VII. OBLONGIFOLII.

Leaves scabrous-hirsutulous, mostly spreading or reflexed. 11. *A. Kumleini.*
Leaves glabrous, except the bristly-ciliate margins, ascending. 12. *A. Fendleri.*

VIII. ALPINI.

One species. 13. *A. alpinus.*

IX. MOLLES.

One species. 14. *A. Jessicae.*

X. Radulini.

Upper part of the stem and the involucres long-villous. 15. *A. Richardsonii.*
Upper part of the stem and involucres short-pubescent. 16. *A. meritus.*

XI. Andini.

Stems decumbent or ascending, about 1 dm. high; leaves glabrate. 17. *A. andinus.*
Stems erect, about 3 dm. high; leaves finely villous. 18. *A. Williamsii.*

XII. Grisei.

Leaves rather copiously and permanently appressed-hirsutulous.
Inflorescence falsely racemose; lower leaves triple-nerved. 40. *A. subracemosus.*
Inflorescence corymbiform or paniculate; leaves all 1-nerved.
Plant 3–4 dm. high; stem retrorse-hirsute below. 19. *A. subgriseus.*
Plant 1–1.5 dm. high; hairs of the stem not retrorse. 20. *A. griseolus.*
Leaves sparingly strigose and glabrate in age, or perfectly glabrous, except the hispidulous-ciliate margins.
Bracts with a green tip and midvein.
Stem stout; leaves oblanceolate, the lower often triple-nerved. 61. *A. Underwoodii.*
Stem slender; leaves narrowly linear-oblanceolate or linear, 1-nerved. 64. *A. Nelsonii.*
Outer bracts green almost throughout. 21. *A. violaceus.*

XIII. Multiflori.

Inflorescence very leafy, not corymbiform.
Pubescence of the stem spreading or reflexed, hirsutulous.
Heads less than 5 mm. high. 22. *A. exiguus.*
Heads 6–8 mm. high. 23. *A. crassulus.*
Pubescence of the stem appressed or ascending.
Bracts very unlike in length, well imbricate, the outer much shorter; heads racemosely arranged, each at the end of a short leafy branch (except in no. 25).
Bracts narrowly oblanceolate, the inner especially acutish; heads less than 5 mm. high.
Stem much branched; heads racemosely disposed on the more or less diverging branches. 24. *A. multiflorus.*
Stem simple below; heads few at the ends of the erect branches. 25. *A. stricticaulis.*
Bracts broadly oblanceolate or the outer spatulate, very obtuse; heads over 5 mm. high. 26. *A. polycephalus.*
Bracts almost equal in length or the outer sometimes longer; heads few or solitary at the ends of the main branches.
Bracts thick, very squarrose, the outer spatulate, rounded at the apex; leaves thick, densely strigose. 27. *A. commutatus.*
Bracts thin, slightly squarrose, oblanceolate, acute; leaves sparingly strigose, in age often glabrate. 28. *A. falcatus.*
Inflorescence less leafy, corymbiform; leaves glabrous, merely hispid-ciliolate; disk 6–8 mm. wide; stem slender.
Stem glabrous. 29. *A. denudatus.*
Stem puberulent. 67. *A. Hallii.*

XIV. Sagittifolii.

Basal leaf-blades cordate or broadly ovate; upper stem-leaves lanceolate; achenes glabrous.
Petioles, midribs, and usually also the stem pubescent with long white hairs. 30. *A. Wilsonii.*
Plant glabrous or sparingly short-pubescent. 31. *A. Lindleyanus.*
Basal leaf-blades lanceolate; upper stem-leaves narrowly lanceolate or those of the inflorescence lance-linear.
Heads few; involucres 8–9 mm. high; rays about 15 mm. long; achenes glabrous. 32. *A. MacCallae.*
Heads numerous; involucres 5–6 mm. high; rays 8–10 mm. long; achenes hispidulous-strigose. 33. *A. Bulleri.*

XV. Laeves.

Bracts much shorter than the disk. 34. *A. brevibracteatus.*
Bracts about equalling the disk or only slightly shorter.
Leaves merely scabrous-ciliate.
Green tips of the bracts broadly rhombic; leaves of the branches much reduced. 35. *A. laevis.*
Green tips of the bracts narrowly rhombic or rhombic-oblanceolate; leaves of the branches gradually but not conspicuously reduced.
Stem-leaves lanceolate or linear-lanceolate, auricled-clasping. 36. *A. Geyeri.*
Stem-leaves narrowly linear, not auricled. 37. *A. subsalignus.*
Leaves decidedly long-ciliate; bracts with oblong green tips. 38. *A. Scribneri.*

XVI. Porteriani.

One species. 39. *A. Porteri.*

XVII. Salicifolii.

Inflorescence falsely racemose; leaves linear to oblanceolate; leaves triple-nerved. 40. *A. subracemosus.*

Inflorescence paniculate or corymbiform; leaves not triple-nerved.
Inflorescence elongate, not flat-topped.
Heads numerous in a much branched panicle; involucre well imbricate.
Leaves distinctly toothed.
Disk of the head about 1 cm. high and broad; leaves thickish. 41. *A. salicifolius.*
Disk 6–8 mm. high and broad; leaves thin. 42. *A. paniculatus.*
Leaves entire, rarely denticulate, with more or less clasping bases.
Disk of the head nearly 1 cm. high and broad.
Bracts linear-filiform, more or less squarrose. 43. *A. hesperius.*
Bracts linear, erect.
Ligules purple. 44. *A. fluviatilis.*
Ligules white or sometimes pinkish.
Bracts not with white midrib; leaves narrowly linear. 45. *A. Osterhoutii.*
Bracts with white midrib; leaves lanceolate or oblong-lanceolate. 46. *A. laetivirens.*
Disk of the head 6–8 mm. high and broad.
Bracts linear, nearly of the same length; leaves narrowly linear. 47. *A. longulus.*
Bracts oblong or linear-oblong, the outer shorter; leaves broadly linear. 48. *A. roseolus.*
Heads rather few, often solitary on the leafy branches; bracts narrowly linear, nearly of the same length, the outer green. 49. *A. Franklinianus.*
Inflorescence more or less flat-topped.
Leaves lanceolate to linear-lanceolate, firm; heads numerous. 50. *A. corymbiformis.*
Leaves narrowly linear, thin; heads few. 51. *A. junciformis.*

XVIII. Lonchophylli.

Stem softly pubescent; leaves lanceolate, not pale.
Stem crisp-puberulent above; upper stem-leaves linear, sessile, but scarcely auricled. 52. *A. lonchophyllus.*
Stem villous above; upper stem-leaves oblong-lanceolate, auriculate-clasping. 53. *A. eriocaulis.*
Stem hispidulous above; leaves linear, pale green. 54. *A. leucopsis.*

XIX. Occidentales.

Bracts linear-subulate, acuminate, the inner almost caudate.
Leaves linear-oblanceolate, acuminate, or the upper linear-lanceolate. 55. *A. subcaudatus.*
Leaves linear. 49. *A. Franklinianus.*
Bracts linear, acute; lower leaves oblanceolate, the upper lanceolate, acute, usually auriculate-clasping.
Disk about 1 cm. broad; stem-leaves linear or lance-linear; basal-leaves linear-oblanceolate; bracts distinctly imbricate in 3–4 series. 56. *A. occidentalis.*
Disk 1.5 cm. or more wide; leaves lanceolate or oblanceolate, entire; bracts in about 2 series.
Bracts, at least the outer ones, wholly green; plant 2–4 dm. high. 57. *A. Fremontii.*
Bracts with more or less distinct white margins below, green-tipped above.
Bracts with conspicuous rhombic-lanceolate green tips; dark green stem-leaves oblanceolate, all except the uppermost crenate and petioled; rays dark blue. 58. *A. Umbachii.*
Bracts with less conspicuous lanceolate green tips; stem-leaves usually entire, light green and glaucous; rays light purple. 59. *A. ciliomarginatus.*

XX. Adscendentes.

Heads few in a simple corymb.
Heads less than 1 cm. high; upper leaves much reduced; stem 2–3 dm. high, slender. 60. *A. armeriaefolius.*
Heads over 1 cm. high; leaves all ample; stems stout, 3–6 dm. high. 81. *A. diabolicus.*
Heads many in a leafy panicle.
Heads about 1 cm. high; stem-leaves lanceolate or oblanceolate.
Stems 2–3 dm. high; bracts usually more or less pubescent on the backs.
Bracts with green midvein and tips, puberulent. 61. *A. Underwoodii.*
Outer bracts wholly green, densely pubescent. 21. *A. violaceus.*
Stems 4–6 dm. high; bracts glabrous on the backs; stem-leaves thick, oblanceolate; panicle elongate. 62. *A. Tweedyi.*
Heads less than 1 cm. high; stem-leaves linear or narrowly linear-oblanceolate.
Bracts not spinulose-tipped.
Lower leaves oblanceolate; bracts glabrous, except the ciliate margins; plant 1–3 dm. high. 63. *A. adscendens.*
Lower leaves narrowly linear-oblanceolate.
Bracts more or less hairy on the back. 64. *A. Nelsonii.*
Bracts glabrous, except the ciliate margins.
Leaves of the floral branches elongate, narrowly linear, ascending. 65. *A. Nuttallii.*
Leaves of the floral branches reduced, short, oblong, spreading. 66. *A. halophilus.*

Bracts with short spinulose or callous tips.
Stem decidedly puberulent. 67. *A. Hallii.*
Stem glabrous. 29. *A. denudatus.*

XXI. Fulcrati.

Outer bracts oblanceolate.
Leaves broadly lanceolate with auriculate-clasping bases.
Outer bracts very squarrose or reflexed; leaves entire. 68. *A. proximus.*
Outer bracts appressed or slightly spreading; leaves distantly toothed.
Outer bracts obtuse. 85. *A. Burkei.*
Outer bracts acute. 69. *A. phyllodes.*
Leaves linear or linear-lanceolate. 70. *A. Mearnsii.*
Outer bracts linear, or subulate, or linear-oblanceolate.
Leaves, at least the lower ones, toothed; bracts loose. 71. *A. Douglasii.*
Leaves entire; bracts close.
Outer bracts much exceeding the disk; some twice as long.
Leaves narrowly linear, not auricled. 72. *A. fulcratus.*
Leaves linear to oblong-oblanceolate or lanceolate, auricled. 73. *A. cordalenus.*
Outer bracts seldom exceeding the disk.
Leaves glabrous above; disk of the head 8–10 mm. high. 74. *A. Eatonii.*
Leaves minutely scabrous-puberulent or pilosulous above.
Bracts linear-subulate; stem short-villous above. 75. *A. Hendersonii.*
Bracts linear-oblanceolate; stem short-pubescent with stiff hairs above.
Branches and leaves strongly ascending; disk 7–8 mm. high and broad. 76. *A. oreganus.*
Branches ascending-spreading; leaves spreading; disk 8–10 mm. high and over 1 cm. broad. 77. *A. microlonchus.*

XXII. Foliosi.

Plant tall, 4–8 dm. high.
Bracts mainly linear or linear-lanceolate.
Bracts and stem villous. 78. *A. Kootenayi.*
Bracts glabrous, except the ciliate margins.
Stem-leaves thick, scabrous above; stem rough-hispid, red. 79. *A. Forwoodii.*
Stem-leaves thinner, lanceolate to linear, acute; stem glabrous, or sparingly pubescent, not hispid.
Disk about 2 cm. wide; leaves sharply denticulate. 80. *A. amplus.*
Disk 1–1.5 cm. wide; leaves usually entire.
Stem-leaves nearly all sessile, linear-lanceolate, only slightly auriculate; plant slender. 81. *A. diabolicus.*
Lower stem-leaves with winged petioles, the upper sessile, clasping, with usually conspicuous auricles. 82. *A. frondeus.*
Outer bracts broadly lanceolate or oblanceolate.
Outer bracts mostly acute.
Leaves firm, broadly lanceolate; auricles of the upper leaves small; branches of the inflorescence crisp-hirsute. 83. *A. Canbyi.*
Leaves thin, oblong-lanceolate; auricles of the stem-leaves large; branches of the inflorescence villous. 84. *A. Cusickii.*
Outer bracts mostly obtuse. 85. *A. Burkei.*
Plant low, 1–2 dm. high; heads usually solitary. 86. *A. apricus.*

39. OREOSTÉMMA Greene. 1. *O. Haydeni.*

40. ASTERÌGERON Rydb. 1. *A. Watsoni.*

41. DOELLINGÈRIA Nees. White Aster. 1. *D. pubens.*

42. IONÁCTIS Greene.

Plant 2–3 dm. high; leaves linear, 1–2 cm. long. 1. *I. stenomeres.*
Plant less than 2 dm. high; leaves oblong or lanceolate, 5–10 mm. long. 2. *I. alpina.*

43. LEUCELÈNE Greene. Heath Aster.

Upper leaves strigose, slightly glandular and not conspicuously hispid-ciliate.
Lower leaves broadly spatulate, upper linear-subulate; branches long and slender. 1. *L. arenosa.*
Leaves all linear-spatulate, or the upper linear; branches short. 2. *L. serotina.*
Upper leaves conspicuously hispid-ciliate, copiously glandular.
Upper leaves linear-oblanceolate, the lower spatulate. 3. *L. hirtella.*
Upper leaves linear-subulate, the lower linear or linear-oblanceolate.
Leaves of the branches 6–12 mm. long. 4. *L. alsinoides.*
Leaves of the branches 2–5 mm. long. 5. *L. ericoides.*

44. MACHAERANTHÈRA Nees. Tansy Aster, Viscid Aster.

Leaves once or twice pinnatifid; root annual; achenes terete.
Green tips of the bracts short, not squarrose.
Heads 6–7 mm. high; plant 3–5 dm. high. 1. *M. parviflora.*

Heads about 1 cm. high; plant low, 1–2 dm. high. 2. *M. humilis.*
Green tips of the bracts long, reflexed-squarrose. 3. *M. tanacetifolia.*
Leaves spinulose-toothed; plant perennial or biennial; achenes compressed.
Bracts linear-subulate; green tips in most longer than the straw-colored lower portion, squarrose reflexed.
Stem and inflorescence distinctly viscid.
Stem-leaves lanceolate or oblong, usually distinctly triple-veined.
Leaves thin, coarsely but not saliently dentate; bracts over 1 mm. wide. 4. *M. Bigelovii.*
Leaves thick with salient teeth; plant very glandular; bracts less than 1 mm. wide.
Achenes glabrous or minutely pubescent; stem glabrous below. 5. *M. varians.*
Achenes strigose; stem glandular-hispid throughout. 6. *M. aspera.*
Stem-leaves linear or oblanceolate, 1-nerved.
Plant 3–5 dm. high; heads numerous in a panicle or raceme. 7. *M. viscosula.*
Plant 1–2 (seldom 3) dm. high; heads solitary or few. 8. *M. Pattersonii.*
Stem strigose-puberulent; involucre slightly if at all viscid.
Leaves all saliently toothed; inflorescence narrow, racemiform; heads subsessile. 9. *M. sessiliflora.*
Leaves except the lowest entire or denticulate; inflorescence open; heads peduncled.
Stem-leaves narrowly linear. 10. *M. rubricaulis.*
Stem-leaves oblanceolate. 11. *M. latifolia.*
Bracts linear, with a lanceolate or rhombic green tip, which is usually much shorter than the straw-colored lower portion.
Leaves cinereous.
Bracts canescent, scarcely at all viscid or glandular.
Stem-leaves linear; plant erect. 12. *M. canescens.*
Stem-leaves narrowly oblanceolate; plant diffuse. 13. *M. superba.*
Bracts densely viscid or glandular, especially the tips.
Bracts in but 3 series, not at all squarrose; the outer wholly greenish. 14. *M. angustifolia.*
Bracts in 4–7 series with squarrose tips.
Stem 1–2 dm. high; upper stem-leaves ample, almost as large and broad as the lower ones. 15. *M. commixta.*
Stem 2–4 dm. high; upper stem-leaves smaller and narrower than the lower ones.
Heads distinctly peduncled.
Leaves very thin; stem-leaves entire or nearly so. 16. *M. leptophylla.*
Leaves thick.
Stem erect, rather simple; stem-leaves linear-oblanceolate or oblanceolate, spinulose-toothed. 17. *M. viscosa.*
Stem divaricately branched, low; upper leaves small, linear or some linear-oblanceolate. 18. *M. pulverulenta.*
Heads subsessile, racemosely disposed; stem-leaves linear-oblanceolate, coarsely toothed. 19. *M. divaricata.*
Leaves glabrous, or glandular-hispid or scabrous, not cinereous.
Stem puberulent or glabrate, glandular only on the inflorescence.
Bracts slightly if at all squarrose.
Stem slender, with strongly ascending branches; leaves subentire. 20. *M. glabella.*
Stem divaricately branched; lower leaves sharply toothed. 21. *M. ramosa.*
Bracts strongly reflexed-squarrose.
Leaves all, except those of the smaller branches, toothed; achenes strigose. 22. *M. Selbyi.*
Leaves all entire; achenes glabrous. 23. *M. spectabilis.*
Stem densely glandular-hispid.
Bracts more or less glandular-pubescent and with squarrose tips. 24. *M. cichoriacea.*
Bracts grayish puberulent; tips short, lanceolate, not squarrose. 25. *M. Fremontii.*

45. ERÍGERON L. Fleabane.

Bracts of the involucre in 1–2 series of almost equal length, not thickened on the back.
Rays inconspicuous, erect or ascending, usually involute and incurved, numerous; often inside them a series of rayless pistillate flowers; leaves entire. I. Acres.
Rays conspicuous, spreading, flat; no rayless pistillate flowers inside.
Plant without runners.
Perennials with rootstocks or woody caudices.
Leaves dissected or deeply cleft. III. Compositi.
Leaves entire or merely toothed.
Stems low, less than 2 dm. high, scapiform, usually bearing only one head; stem-leaves usually reduced.
Involucre and peduncles villous with many-celled hairs; bracts comparatively broad. II. Uniflori.
Involucre and peduncles hirsute to glandular-puberulent or glabrate, not long-villous. IV. Radicati.

Stem leafy, 2–10 dm. high, if lower bearing several heads; stem-leaves ample.
Stems densely cespitose from a thick taproot; heads small, the disk rarely more than 1 cm. wide.
Pappus double; stem hirsute. V. PUMILI.
Pappus simple; stems strigose. VI. DECUMBENTES.
Stems usually solitary from the ends of distinct (sometimes branched) rootstocks; heads large, the disk more than 1 cm. wide.
Bracts with loose tips; rays broad; pappus simple; lower leaves broadly oblanceolate, the upper often reduced.
Bracts villous. VII. ELATIORES.
Bracts glandular-puberulent or glabrous. VIII. SALSUGINOSI.
Bracts appressed, except the very tips; rays narrow; pappus double; perennials with short rootstocks.
Upper stem-leaves ample, ovate to lanceolate, not much smaller than the lower, which are more or less distinctly 3-nerved; peduncles usually short, ascending. IX. MACRANTHI.
Upper stem-leaves reduced, linear-lanceolate; none of the leaves 3-nerved; peduncles long and erect. X. GLABELLI.
Annuals or biennials, or perennials by means of stolons and offsets.
Stem-leaves broad, cordate-clasping; perennials with offsets. XI. PHILADELPHICI.
Stem-leaves not cordate-clasping.
Stems rather simple, with a few large heads; disks about 1 cm. broad or more. XII. ASPERI.
Stems much branched, leafy, with numerous small heads; disk 6–9 mm. wide.
Stems strigose or sparingly hirsute except at the base, or glabrous; pappus-bristles of the ray-flowers usually lacking; annuals. XIII. RAMOSI.
Stems and leaves densely short-pubescent with spreading hairs; pappus-bristles of the ray-flowers present.
Annuals; pappus scant and simple. XIV. BELLIDIASTRA.
Biennials (rarely perennials); pappus double, the outer of short subulate squamellae. XV. DIVERGENTES.
Plants at first with a scapiform naked peduncle, later producing runner-like branches. XVI. FLAGELLARES.
Bracts of the involucre in 3–4 series, more or less imbricate, thickened on the back, the outer usually successively shorter; perennials with cespitose caudices.
Rays bluish, purplish, or white.
Achenes terete or nearly so, several-nerved. XVII. CANI.
Achenes flattened or quadrangular, 2–4-nerved.
Leaves more or less distinctly triple-nerved. XVIII. CAESPITOSI.
Leaves not triple-nerved.
Plants low, 2 dm. or less high; basal leaf-blades from broadly oval to narrowly linear-oblanceolate; heads solitary to few.
Basal leaf-blades broadly oval or obovate. XIX. ASPERUGINEI.
Leaves narrowly linear-oblanceolate.
Involucres glandular. XX. ARENARIOIDES.
Involucres hirsute or strigose. XXI. LAETEVIRENTES.
Plant taller, 3–4 dm. high; leaves filiform or narrowly linear.
Leaves narrowly linear or linear-oblanceolate; achenes quadrangular, 4-nerved. XXII. TETRAPLEURI.
Leaves filiform; achenes flat, 2-nerved. XXIII. FILIFOLII.
Rays yellow or ochroleucous. XXIV. LUTEI.

I. ACRES.

Bracts of the involucre linear, abruptly acute, never glandular; inner rayless pistillate flowers rare; inflorescence strictly racemiform, with almost erect branches.
Low, 1–2 dm. high, usually branched at the base; stem-leaves sessile; peduncles short, not exceeding the subtending leaves. 1. *E. minor.*
Taller, 3–6 dm. high, simple; lower stem-leaves petioled; basal leaves oblanceolate; peduncles elongate. 2. *E. lonchophyllus.*
Bracts of the involucre linear-subulate, long-attenuate, and except in *E. elatus* more or less glandular-puberulent; inflorescence inclined to be corymbiform or paniculate, branches ascending.
Plant tall, 3–8 dm. high, apparently only biennial; heads numerous, corymbose.
Bracts glandular-puberulent, rarely with a few hairs.
Base of the involucre merely glandular-puberulent; whole plant glabrous or the margins of the leaves sparingly ciliate; stem-leaves lanceolate. 3. *E. politus.*
Base of the involucre sparingly hirsute; leaves hairy, at least on the margins and veins beneath; stem-leaves linear or linear-oblanceolate. 4. *E. droebachensis.*
Bracts hirsute or both hirsute and glandular-puberulent.
Bracts both glandular-puberulent and hirsute; leaves more or less hairy. 5. *E. yellowstonensis.*
Bracts not glandular; leaves glabrous except the ciliate margins. 6. *E. elatus.*

Plant low, 1–3 dm. high, perennial; heads few or solitary.
Involucres not black-hairy.
Involucres glandular and hirsute. 7. *E. jucundus.*
Involucres villous, not glandular. 8. *E. alpinus.*
Involucre black-hairy. 9. *E. unalaschkensis.*

II. Uniflori.

Ligules purple or white.
Ligules 0.5 mm. or less wide, erect; plant usually less than 1 dm. high; leaves and stem decidedly villous. 9. *E. unalaschkensis.*
Ligules 1–1.5 mm. wide, spreading; plant about 1 dm. high; basal leaves glabrate; lower part of the stem strigose or glabrate.
Involucres and peduncles with black-purple hairs. 10. *E. melanocephalus.*
Involucres and peduncles white-hairy.
Basal leaves sparingly hairy or glabrate.
Basal leaves spatulate, obtuse. 11. *E. simplex.*
Basal leaves narrowly linear-lanceolate. 92. *E. Scribneri.*
Basal leaves densely villous.
Stem 1–2 dm. high, leafy; basal leaves oblanceolate, often acutish. 12. *E. grandiflorus.*
Stem 5–6 cm. high, scapiform; basal leaves cuneate-spatulate, often 3-toothed. 13. *E. lanatus.*
Ligules yellow. 14. *E. aureus.*

III. Compositi.

Leaves divided into linear or spatulate divisions; plant with a cespitose caudex.
Leaves pinnately divided.
Heads radiate; leaf segments rather distant; peduncles 5–20 cm. long. 15. *E. pinnatisectus.*
Heads discoid; leaf segments crowded; peduncles 2–5 cm. long. 16. *E. mancus.*
Leaves once to thrice ternately divided.
Leaf-blades twice or thrice ternate. 17. *E. compositus.*
Leaf-blades cuneate, ternately or pedate-quinnately cleft at the apex; divisions spatulate.
Disk 10–15 mm. broad; bracts linear-subulate, scarcely scarious-margined; lobes of the leaves spatulate. 18. *E. trifidus.*
Disk 7–10 mm. broad; bracts linear-lanceolate, scarious-margined; lobes of the leaves linear. 19. *E. pedatus.*
Leaves flabelliform, lobed or twice 3-cleft at the apex; plant with a creeping rootstock. 20. *E. flabellifolius.*

IV. Radicati.

Head radiate.
Involucre glandular-puberulent or glabrate, not hirsute.
Stem and leaves glabrous or nearly so; involucres less than 12 mm. broad.
Basal leaves linear-oblanceolate. 21. *E. leiomerus.*
Basal leaves spatulate. 22. *E. spathulifolius.*
Stem and leaves pubescent; involucres 12–15 mm. wide.
Stem and leaves hirsute. 63. *E. viscidus.*
Stem strigose; leaves puberulent, especially on the margins. 23. *E. controversus.*
Involucre more or less hirsute or strigose, in some also slightly glandular-puberulent.
Leaves and stem glandular scabrous as well as hirsute. 24. *E. glandulosus.*
Leaves and stem hirsute or strigose, rarely glandular.
Stem 1 dm. or more high, appressed-pubescent; disk over 1 dm. high; branches of the caudex or rootstock rather slender, often purplish.
Leaves narrowly linear-oblanceolate, 1–3 mm. wide, strigose.
Involucral bracts with appressed pubescence; rays purple. 25. *E. gracilis.*
Involucral bracts with spreading pubescence. 26. *E. Engelmannii.*
Rays white; bracts narrowly linear.
Rays usually purplish; bracts lance-linear.
Leaves oblanceolate to linear-oblanceolate, 3–8 mm. wide, glabrous above, except the margins. 27. *E. ursinus.*
Stem 4–7 cm. high; disk less than 1 cm. wide; caudex and its branches stout and short, not purplish.
Leaves linear-oblanceolate to spatulate.
Stem with appressed hairs, or glabrate.
Leaves and stem glabrous or nearly so; stem almost leafless. 28. *E. Evermannii.*
Leaves and stem distinctly strigose, the latter with several leaves. 29. *E. Peasei.*
Stem with more or less spreading hairs.
Stems decumbent or ascending; leaves spreading, either softly hairy or glabrate in age.
Pappus double; inner pappus of 10–12 bristles, 2 mm. long; outer pappus of small squamellae; rays white. 30. *E. radicatus.*
Pappus simple or nearly so, consisting of many bristles, 3 mm. long; rays purple. 31. *E. vetensis.*
Stems and leaves almost erect; the latter coarsely hirsute.
Basal leaves narrowly linear-oblanceolate; stem-leaves linear. 32. *E. nanus.*

Basal leaves narrowly spatulate; stem-leaves oblanceolate. 38. *E. condensatus.*
Leaves linear-filiform. 33. *E. nematophyllus.*
Heads discoid; leaves narrowly linear. 34. *E. Bloomeri.*

V. PUMILI.

Pubescence of rather long hairs; branches of the stem almost erect.
Heads radiate.
Stems over 1 dm. high, when well developed, with more than one head each.
Ray-flowers white.
Outer pappus of small inconspicuous bristles; plant copiously hairy. 35. *E. pumilus.*
Outer pappus of broad squamellae; plant sparingly hairy. 36. *E. Brandegei.*
Ray-flowers blue or purplish; outer pappus conspicuous and squamellate. 37. *E. concinnus.*
Stems usually less than 1 dm. high and usually monocephalous.
Leaves spatulate. 38. *E. condensatus.*
Leaves narrowly linear-oblanceolate. 32. *E. nanus.*
Heads discoid. 39. *E. aphanactis.*
Pubescence very short; branches of the stems spreading. 72. *E. Wootonii.*

VI. DECUMBENTES.

Leaves 1-nerved, linear-oblanceolate; the lower usually obtusish. 26. *E. Engelmannii.*
Leaves 3-nerved, at least at the base, equally long-acuminate at both ends.
Pubescence of the leaves loose, hirsute and somewhat glandular-puberulent. 40. *E. decumbens.*
Pubescence of the leaves appressed-strigose. 41. *E. microlonchus.*

VII. ELATIORES.

Bracts very densely villous, squarrose; leaves entire. 42. *E. elatior.*
Bracts sparingly villous; leaves usually dentate.
Ligules white; bracts scarcely squarrose; stem sparingly pubescent. 43. *E. Coulteri.*
Ligules blue or purple; bracts squarrose; stem densely pubescent above. 44. *E. peregrinus.*

VIII. SALSUGINOSI.

Rootstock thick; leaves thickish, acute; bracts narrowly linear-lanceolate, with strongly spreading tips.
Peduncles mostly solitary, finely strigose; stem single from the rootstock. 45. *E. salsuginosus.*
Peduncles usually more than one, scabrous; stems several from a caudex. 49. *E. eucephaloides.*
Rootstock slender; leaves thin, with long mucronate tips; bracts narrowly linear-subulate, only slightly spreading. 46. *E. Howellii.*

IX. MACRANTHI.

Basal leaf-blades broadly obovate-spatulate, often denticulate; stem-leaves distant, shorter than the internodes, not ciliate on the margins; bracts glandular-puberulent, seldom with a few hairs. 47. *E. superbus.*
Basal leaf-blades oblanceolate, entire; stem-leaves usually longer than the internodes, usually ciliate on the margins.
Bracts linear-subulate, glandular-puberulent, not at all hirsute; leaves glabrous.
Leaves linear-lanceolate, minutely ciliolate.
Leaves dark green; bracts not with loose tips. 48. *E. salicinus*
Leaves light green; bract with spreading tips. 49. *E. eucephaloides.*
Leaves not dark green, dull, strongly hirsute-ciliate. 50. *E. macranthus.*
Bracts linear, more or less hirsute.
Stem and leaves glabrous or nearly so; the latter ciliate only on the margin and the veins below; bracts glandular-puberulent and with scattered hairs. 51. *E. speciosus.*
Stem and leaves hairy; bracts hirsute or both hirsute and glandular.
Leaves hirsute.
Pubescence scant, that of the stem long; leaves linear-lanceolate. 52. *E. conspicuus.*
Pubescence of the leaves and the involucres dense, that of the stem short.
Plant tall, green; upper stem-leaves ovate or ovate-lanceolate, distinctly triple-nerved. 52. *E. subtrinervis.*
Plant low, canescent; upper stem-leaves lanceolate, scarcely triple-nerved. 54. *E. incanescens.*
Leaves glandular-puberulent. 55. *E. Vreelandii.*

X. GLABELLI.

Involucre hirsute or strigose, not at all glandular.
Leaves glabrous, except the ciliate margins. 56. *E. glabellus.*
Leaves more or less pubescent.
Pubescence loose and spreading. 57. *E. fruticetorum.*
Pubescence appressed. 58. *E. Earlei.*
Involucres more or less glandular, sometimes also hirsute.
Leaves glabrous, except the ciliate margins.
Stem pubescent, especially above, only slightly glandular.
Bracts narrowly linear-subulate; ligules usually bluish or pink.

Involucre conspicuously hirsute as well as glandular; stem low, usually with a single head. 59. *E. rubicundus.*
Involucre slightly if at all hirsute; stem 3 dm. high or more, usually with more than one head. 60. *E. eximius.*
Bracts lance-subulate; ligules white. 43. *E. Coulteri.*
Stem scarcely hairy, decidedly glandular above. 61. *E. Smithii.*
Leaves and stem more or less pubescent.
Involucres about 18 mm. broad; plant conspicuously long-hairy. 62. *E. formosissimus.*
Involucres about 15 mm. broad; plant less conspicuously hairy, more glandular. 63. *E. viscidus.*

XI. PHILADELPHICI.

Basal leaves crenate or dentate, with broad rounded or ovate teeth; upper leaves lanceolate, acute; rays white or pink. 64. *E. philadelphicus.*
Basal leaves dentate, with sharp, triangular, salient teeth; upper stem-leaves triangular-lanceolate, acuminate; rays rose-colored or purple. 65. *E. purpureus.*

XII. ASPERI.

Pubescence short, usually not dense.
Pubescence appressed or rarely spreading; hairs not with pustulate bases.
Heads small; disk 1 cm. or less wide; ligules white; basal leaves linear-oblanceolate, entire. 66. *E. asper.*
Heads larger; disk 1–1.5 cm. wide; ligules blue or purple; basal leaves usually more or less toothed, oblanceolate. 67. *E. oblanceolatus.*
Pubescence spreading; hairs with pustulate bases; basal leaves narrowly oblanceolate; ligules white or rarely pale rose. 68. *E. consobrinus.*
Pubescence long, dense, spreading or reflexed. 69. *E. Drummondii.*

XIII. RAMOSI.

One species. 70. *E. ramosus.*

XIV. BELLIDIASTRA.

One species. 71. *E. Bellidiastrum.*

XV. DIVERGENTES.

Stem simple below; rays usually white. 72. *E. Wootoni.*
Stem branched at the base; rays usually purplish. 73. *E. divergens.*

XVI. FLAGELLARES.

Leaves and stems appressed-hairy. 74. *E. flagellaris.*
Leaves and stem densely short-pubescent with spreading hairs.
Basal leaves oblanceolate, entire, or 3-lobed at the apex; leaves of the stolons linear; plant gray. 75. *E. commixtus.*
Basal leaves obovate-spatulate, entire, or with several lateral lobes or teeth; leaves of the stolons oblanceolate; plant greener. 76. *E. nudiflorus.*

XVII. CANI.

Disk of the heads fully 1 cm. high and about 1.5 cm. wide; basal leaves spatulate, obtuse.
Leaves canescent. 77. *E. Wyomingia.*
Leaves silvery white. 78. *E. argentatus.*
Disk of the heads 7–8 mm. high and about 1 cm. wide; basal leaves oblanceolate, mostly acutish. 79. *E. canus.*

XVIII. CAESPITOSI.

Stem leafy; stem-leaves almost as broad as the basal ones.
Lower leaves narrowly linear-oblanceolate; upper leaves narrowly linear; all acute and coarsely hairy; rays usually lilac or purplish. 80. *E. corymbosus.*
Lower leaves oblanceolate or linear-spatulate, usually obtusish; stem-leaves linear or oblong; all densely canescent; rays usually white.
Stem erect, about 3 dm. high, usually with several heads; stem-leaves linear. 81. *E. subcanescens.*
Stem decumbent at the base, 1–2 dm. high, with 1–3 (seldom more) heads; stem-leaves oblong.
Plant not conspicuously glandular. 82. *E. caespitosus.*
Plant conspicuously glandular. 83. *E. nauseosus.*
Stem more or less naked above, decumbent at the base; stem-leaves at least the upper ones reduced.
Stems about 2 dm. high; disk 10–12 mm. high and about 15 mm. wide. 84. *E. nevadensis.*
Stems about 1 dm. high; disks about 6 mm. high and less than 1 cm. wide. 85. *E. Eatonii.*

XIX. ASPERUGINEI.

Leaves with a spreading rough pubescence. 86. *E. asperugineus.*
Leaves strictly appressed-cinereous.
Disk 10–15 mm. wide; leaves finely and densely hairy; involucral bracts strigose. 87. *E. Tweedyi.*
Disk 5–10 mm. wide; leaves sparingly and coarsely hairy; involucral bracts hirsute and glandular-puberulent. 88. *E. tener.*

XX. ARENARIOIDES.

One species. 89. *E. arenarioides.*

XXI. LAETEVIRENTES.

Stems 1.5–2 dm. high, leafy.
Ligules blue or purple, scarcely more than 1 mm. wide. 90. *E. laetevirens*

Ligules white, 1.5–2 mm. wide. 91. *E. montanensis.*
Stem 3–8 cm. high, scapiform, leafless or few-leaved.
Pubescence of the stem appressed or ascending; stems decumbent at the base.
Leaves grayish strigose, in age glabrate; bracts hirsute.
Bracts linear, acuminate; ligules mostly purple, 7–8 mm. long. 92. *E. Scribneri.*
Bracts lance-linear, acute; ligules mostly white. 30. *E. radicatus.*
Leaves and bracts silvery strigose. 101. *E. pulvinatus.*
Pubescence of the stem spreading; stems erect; leaves densely hirsute; ligules white. 93. *E. Parryi.*

XXII. Tetrapleuri.

Ligules fully 1 cm. long, white; involucres about 1 cm. broad. 94. *E. utahensis.*
Ligules 5–6 mm. long, sky-blue or pinkish; involucres 6–8 mm. broad. 95. *E. sparsifolius.*

XXIII. Filifolii.

Involucres hirsute. 96. *E. filifolius.*
Involucres strigose. 97. *E. linearis.*

XXIV. Lutei.

Bracts strigose or hirsute; plant cespitose; leaves narrowly linear.
Stems scapiform, naked or with a few small leaves; bracts strigose. 98. *E. luteus.*
Stems more or less leafy; bracts hirsute.
Petioles of the leaves hirsute-ciliate. 99. *E. ochroleucus.*
Petioles as well as the blades finely cinereous-strigose. 100. *E. peucephyllus.*
Bracts long-villous; leaves spatulate. 14. *E. aureus.*

46. LÉPTILON Raf. Horseweed, Canada Fleabane. 1. *L. canadense.*

47. ESCHENBÀCHIA Moench. 1. *E. Coulteri.*

48. BÁCCHARIS L. Groundsel Tree.

Pappus copious, in fruit elongating and surpassing the styles.
Pappus-bristles in several series; plant 3–6 dm. high, herbaceous, with a woody base. 1. *B. Wrightii.*
Pappus-bristles in one series; plants 1–5 mm. high, shrubby.
Fertile heads hemispherical, 5–10 mm. broad; bracts all acute. 2. *B. salicina.*
Fertile heads deeply campanulate, 3–5 mm. broad; outer bracts obtuse. 3. *B. Emoryi.*
Pappus scant, little if at all elongating, in fruit not exceeding the styles.
Achenes 10-nerved; leaves less than 2 cm. long, subentire. 4. *B. sergiloides.*
Achenes 5-nerved; leaves 5–15 cm. long, serrate. 5. *B. glutinosa.*

49. BERTHELÒTIA DC. 1. *B. sericea.*

50. STYLOCLÌNE Nutt. 1. *S. micropoides.*

51. ANCISTROCÁRPHUS A. Gray. 1. *A. filagineus.*

52. PSILOCÁRPHUS Nutt.

Involucres with long loose wool; upper leaves not narrowed at the base. 1. *P. elatior.*
Involucres with very short wool; leaves all narrowed at the base. 2. *P. oreganus.*

53. DIAPÈRIA Nutt. 1. *D. prolifera.*

54. ÓGLIFA Cass. 1. *O. californica.*

55. ANTENNÀRIA Gaertn. Cats-Paws, Everlasting.

Pappus-bristles of the staminate heads with clavate or scarious-dilated tips.
Plants surculose-proliferous with prostrate leafy stolons.
Plant caulescent.
Heads racemose or paniculate, long-peduncled; involucres almost glabrous. I. Racemosae.
Heads in cymose clusters or rarely solitary; involucres woolly at the base.
Bracts of the involucres with green or brown upper portion. II. Alpinae.
Bracts of the involucres with white or pink upper portion.
Heads 5–8 mm. high.
Bracts usually with bright pink upper portion. III. Roseae.
Bracts with white upper portion.
Leaves of the stolons narrowly oblanceolate, 1.5–5 cm. long; bracts with dark spots. IV. Nardinae.
Leaves of the stolons rhombic to spatulate, 0.5–3 cm. long; bracts with dark spots only in no. 23. V. Aridae.
Heads 8–12 mm. high.
Leaves tomentose on both sides. VI. Apricae.
Leaves glabrous above. VII. Campestres.

Plant acaulescent; heads subsessile among the rosettes of the basal leaves. VIII. ROSULATAE.
Plants not surculose-proliferous; stolons erect.
Heads 4–5 mm. high; bracts nearly glabrous, scarious throughout; leaves silky-tomentose. IX. ARGENTEAE.
Heads 6–10 mm. high; bracts tomentose at the base, only tips scarious; leaves villous-tomentose. X. PULCHERRIMAE.
Pappus-bristles of the small staminate heads not clavate; achenes puberulent; hairs bifurcate at the apex; plant low and densely cespitose. XI. DIMORPHAE.

I. RACEMOSAE.

Leaves of the rosettes oval or spatulate; lower pedicels 2–5 cm. long. 1. *A. racemosa.*
Leaves of the rosettes oblanceolate; lower pedicels 1 cm. long or less. 2. *A. oblancifolia.*

II. ALPINAE.

Leaves glabrous above.
Leaves of the rosettes narrowly oblanceolate; heads usually several; bracts of the pistillate heads abruptly acuminate. 3. *A. alpina.*
Leaves of the rosettes broadly oblanceolate or spatulate; inner bracts acute or acuminate, the outer obtuse.
Heads usually solitary. 4. *A. monocephala.*
Heads 3–6 in a cluster. 5. *A. chlorantha.*
Leaves tomentose on both sides; bracts acute or obtuse.
Leaves of the rosettes broadly obovate-cuneate, subsessile.
Heads 7–8 mm. high; leaves 8–10 mm. long; tips of bracts dark brown. 6. *A. pulvinata.*
Heads 5–6 mm. high; leaves less than 8 mm. long; tips of the bracts light brown. 7. *A. albescens.*
Leaves of the rosettes spatulate or oblanceolate, distinctly petioled.
Heads 6–8 mm. high. 8. *A. fusca.*
Heads 5–6 mm. high.
Bracts very dark, almost black at the base, but often with white tips.
Inner bracts of the pistillate heads acute.
Leaves narrowly oblanceolate, acute or short-acuminate; tomentum very fine and appressed. 9. *A. acuta.*
Leaves spatulate or broadly oblanceolate, obtuse; tomentum rather loose. 10. *A. media.*
Bracts obtuse or rounded. 11. *A. mucronata.*
Bracts moderately dark, umber-colored to light brown.
Inner bracts not rose-colored.
Leaves appressed-tomentose, shining and yellowish.
Bracts of the pistillate heads linear-lanceolate, acute. 12. *A. Sansoni.*
Bracts of the heads oblong, obtuse.
Heads sessile; stolons decumbent. 13. *A. flavescens.*
Heads peduncled; stolons ascending. 14. *A. confinis.*
Leaves white-tomentose, very rarely yellowish.
Heads 2 or 3; leaves broadly obovate-spatulate. 15. *A. aizoides.*
Heads several; leaves spatulate or oblanceolate.
Bracts of the pistillate heads obtuse.
Involucres more or less viscid; bracts with whitish tips. 23. *A. sedoides.*
Involucres not viscid; bracts umber-colored. 16. *A. umbrinella.*
Bracts of the pistillate heads acute. 17. *A. Macounii.*
Inner bracts rose-colored. 18. *A. concinna.*

III. ROSEAE.

Leaves cuneate-spatulate, obtuse, without distinction between blade and petiole. 18. *A. concinna.*
Leaves oblanceolate or spatulate, with distinct petioles.
Leaves narrowly oblanceolate, acute. 19. *A. rosea.*
Leaves broadly spatulate, obtuse. 20. *A. imbricata.*

IV. NARDINAE.

One species. 21. *A. corymbosa.*

V. ARIDAE.

Stem-leaves 6–8 mm. wide, oblong or the uppermost lanceolate. 22. *A. foliacea.*
Stem-leaves 2–5 mm. wide, linear or oblanceolate.
Bracts with a large brown or green spot, more or less viscid. 23. *A. sedoides.*
Bracts slightly if at all spotted, not viscid.
Bracts of the pistillate heads obtuse; plant 1–2 dm. high.
Bracts of the pistillate heads with oblong to linear upper portions. 24. *A. arida.*
Bracts of the pistillate heads with oval or obovate upper portions. 25. *A. scariosa.*
Bracts of the pistillate heads acute, at least the inner ones.
Inflorescence and upper leaves glandular-hairy; leaves of the inflorescence large, scarcely smaller than the upper stem-leaves; bracts greenish.
Leaves of the stolons 5–15 mm. long, rhombic-spatulate; tomentum very fine, appressed and silky. 26. *A. microphylla.*

Leaves of the stolons spatulate, usually rounded at the apex, 15–30 mm. long, tomentum looser. 27. *A. bracteosa.*
Inflorescence and upper leaves not glandular, the latter reduced; bracts brownish. 28. *A. oxyphylla.*

VI. APRICAE.

Plant tall, 2–3 dm. high; heads usually peduncled.
Leaves less than 2 cm. long and 5–8 mm. wide, usually not triple-nerved; heads 7–9 mm. high. 28. *A. oxyphylla.*
Leaves over 2 cm. long, 7–10 mm. wide, triple-nerved; heads about 1 cm. high. 29. *A. obovata.*
Plant low, usually less than 1 dm. high; heads subsessile. 30. *A. aprica.*

VII. CAMPESTRES.

Plant about 3 dm. high; basal leaves distinctly triple-nerved. 31. *A. Howellii*
Plant 1 dm. or less; basal leaves not distinctly triple-nerved.
Inflorescence not glandular; bracts of the pistillate heads lanceolate or linear-lanceolate, acute; those of the staminate heads oblong, obtuse. 32. *A. campestris.*
Inflorescence more or less glandular-hairy; bracts in both heads ovate to lanceolate, acute or acutish, in the staminate broader. 33. *A. marginata.*

VIII. ROSULATAE.

Bracts with white upper portion; leaves white on both sides. 34. *A. rosulata.*
Bracts with brown upper portion; leaves glabrate above. 35. *A. Sierrae-Blancae.*

IX. ARGENTEAE.

Basal leaves oblanceolate. 36. *A. oblanceolata.*
Basal leaves very narrowly linear-oblanceolate. 37. *A. luzuloides.*

X. PULCHERRIMAE.

Bracts with a large dark spot, those of the pistillate heads ovate to lanceolate, acute, those of the staminate heads ovate or oval, obtuse or acutish; pistillate heads 6–10 mm. high, turbinate at the base.
Plants 1–2 dm. high; ribs of the leaves not conspicuous; outer bracts wholly fuscous. 38. *A. lanata.*
Plants 3–5 dm. high; leaves with conspicuous ribs; tips of the bracts brownish or white. 39. *A. pulcherrima.*
Bracts with small dark spots or none; bracts of both staminate and pistillate heads with oblong or oval, obtuse tips, those of the staminate heads slightly broader. 40. *A. anaphaloides.*

XI. DIMORPHAE.

Plant without filiform stolons.
Fruiting heads not over 1.5 cm. high; leaves oblanceolate; stem 1–3 cm. high. 41. *A. dimorpha.*
Fruiting heads about 2 cm. high; leaves spatulate, loosely tomentose; stem 3–5 cm. high. 42. *A. macrocephala.*
Plants with filiform ascending stolons. 43. *A. flagellaris.*

56. ANÁPHALIS DC. PEARLY EVERLASTING.

Leaves narrowly linear, 1-nerved; heads about 5 mm. high. 1. *A. angustifolia.*
Leaves linear-lanceolate to oblong-lanceolate, 3-nerved; heads 6–7 mm. high.
Leaves comparatively thin, less tomentose above. 2. *A. subalpina.*
Leaves comparatively thick, almost equally white-tomentose on both sides. 3. *A. lanata.*

57. GNAPHÀLIUM L. CUDWEED, EVERLASTING.

Bristles of the pappus not united at the base, falling off separately.
Heads not leafy-bracted; involucral bracts well imbricate, scarious, white or tinged with brownish, rose, or yellow; plants mostly tall.
Leaves tomentose on both sides; plants little if at all glandular; involucres tomentose at the base.
Stem-leaves narrowed at the base, neither decurrent nor clasping.
Perennial or biennial; stem 3–5 dm. high; inflorescence open; bracts white 1. *G. Wrightii.*
Annual; stem 1–2 dm. high; inflorescence dense; bracts yellowish. 2. *G. thermale.*
Stem-leaves not narrowed at the base, more or less decurrent, or at least auricled-clasping.
Leaves with short broad adnate auricles at the base; bracts obtuse.
Heads 5–6 mm. high, numerous, in glomerules ending the short spreading branches; bracts slightly if at all yellowish; plant tall; stem-leaves lanceolate or oblong, with rounded bases, cuspidate. 3. *G. proximum.*
Heads 4 mm. high, few, in small glomerules, ending the stem or few erect branches; bracts decidedly yellowish when young; plant low; leaves oblong to linear, merely acute or obtuse.
Stem erect, strict; lower stem-leaves oblong-oblanceolate. 4. *G. sulphurescens.*
Stem decumbent at the base; lower stem-leaves spatulate. 5. *G. lagopodioides.*
Leaves distinctly decurrent; bracts acutish; heads 4–5 mm. high.
Bracts broadly ovate; inflorescence corymbiform. 6. *G. Williamsii.*

Bracts lance-ovate; inflorescence narrow. 7. *G. microcephalum.*
Leaves on the upper surface green and decidedly glandular, decurrent; involucres glabrous. 8. *G. Macounii.*
Heads leafy-bracted; involucral bracts little imbricate, brown or greenish; plant low; involucre floccose at the base.
Plants loosely floccose; leaves broad, spatulate, oblong or oblanceolate. 9. *G. palustre.*
Plants appressed-tomentose; leaves except the lowest narrowly oblanceolate or linear.
Stem diffusely branched; glomerules crowded, cymosely disposed.
Upper leaves narrowly oblanceolate. 10. *G. uliginosum.*
Upper leaves narrowly linear. 11. *G. exilifolium.*
Stem mostly simple, erect; glomerules spicately disposed. 12. *G. Grayi.*
Bristles of the pappus united in a ring at the base and falling off together; leaves oblanceolate or spatulate. 13. *G. ustulatum.*

58. ADENOCAÙLON Hook. 1. *A. bicolor.*

59. MELAMPÓDIUM L. 1. *M. leucanthum.*

60. SÍLPHIUM L. Rosinweed, Compass Plant. 1. *S. integrifolium.*

61. ENGELMÁNNIA T. & G. 1. *E. pinnatifida.*

62. BOLÓPHYTA Nutt. 1. *B. alpina.*

63. PARTHÈNICE A. Gray. 1. *P. mollis.*

64. CRASSÌNA Scepin.

Ligules large, much longer than the disk. 1. *C. grandiflora.*
Ligules scarcely longer than the disk. 2. *C. anomala.*

65. HELIÓPSIS L. Ox-eye. 1. *H. scabra.*

66. BRAUNÈRIA Neck. Purple Cone-flower. 1. *B. angustifolia.*

67. GYMNOLÒMIA H.B.K.

Perennials.
Leaves lanceolate; caudex thick, lignescent. 1. *G. multiflora.*
Leaves linear; caudex slender. 2. *G. linearis.*
Annuals; leaves linear.
Plant finely strigose. 3. *G. annua.*
Plant hispid. 4. *G. ciliata.*

68. RUDBÉCKIA L. Cone-flower, Golden Glow, Nigger-heads.

Heads radiate; disk in fruit spherical or oblong.
Leaves entire or merely toothed; plant hispid. 1. *R. hirta.*
Leaves except the uppermost 3–5-cleft or pinnatifid; plant glabrous or nearly so. 2. *R. ampla.*
Heads discoid; disk in fruit cylindraceous.
Leaves pinnately parted. 3. *R. montana.*
Leaves undivided, toothed or entire. 4. *R. occidentalis.*

69. RATIBÌDA Raf. Cone-flower.

Disk in fruit oblong, about 1 cm. long; pappus of 1–2 awn-like teeth, without intermediate squamellae. 1. *R. Tagetes.*
Disk in fruit cylindraceous, 2–4 cm. long; pappus with a series of squamellae. 2. *R. columnifera.*

70. GALINSOGA R. & P. 1. *G. parviflora.*

71. BALSAMORRHÌZA Hook. Balsam-root.

Leaves entire or bluntly toothed, never pinnatifid.
Plant white-tomentose.
Leaves with entire margins or slightly undulate, oblong-cordate to hastate. 1. *B. sagittata.*
Leaves more or less distinctly toothed, ovate-lanceolate, with subcordate base. 2. *B. tomentosa.*
Plant hirsute-puberulent; basal leaves cordate.
Ligules linear, deciduous; achenes glabrous. 3. *B. deltoidea.*
Ligules oval, becoming papery, and more or less persistent; achenes puberulent. 4. *B. Careyana.*
Leaves mostly pinnatifid or at least incisedly toothed.
Plant canescent or white-tomentose.
Plants loosely white-tomentose.

Stem 1–3 dm. high; segments of the leaves 1–3 cm. long, ovate, entire or slightly toothed. 5. *B. incana.*
Stem 3 dm. or more high; segments of the leaves 3–5 cm. long, lanceolate, coarsely toothed. 6. *B. floccosa.*
Plant finely canescent, tomentose only on the involucre; some of the leaves merely toothed. 7. *B. terebinthacea.*
Plants more or less hispid, neither canescent nor tomentose.
Disk 3–4 cm. broad; segments of the leaves mostly entire. 8. *B. macrophylla.*
Disk 2–2.5 cm. broad; segments of the leaves mostly toothed. 9. *B. hirsuta.*

72. WYÉTHIA Nutt. Mule-ears.

Involucral bracts nearly equal, in 2–3 series; stem not white.
Rays pale yellow or white; plant hispid. 1. *W. helianthoides.*
Rays bright yellow.
Plant glabrous. 2. *W. amplexicaulis.*
Plant pubescent.
Plant sparingly hirsute or scabrous. 3. *W. robusta.*
Plant densely pubescent. 4. *W. arizonica*
Involucral bracts unequal, the outer much shorter, in 5–6 series; stem white. 5. *W. scabra.*

73. HELIÁNTHUS L. Sun-flower, Ground Artichoke.

Annuals; leaves broad, ovate or cordate or lanceolate; disk purple or dark brown.
Bracts ciliate, hispid, ovate or obovate, abruptly acuminate.
Lower leaves at least ovate or cordate, distinctly toothed. 1. *H. lenticularis.*
Leaves lanceolate or narrowly deltoid, minutely toothed or entire. 2. *H. aridus.*
Bracts not ciliate, canescent-strigose, lanceolate. 3. *H. petiolaris.*
Perennials.
Disk dark brown or purple.
Leaves linear. 4. *H. orgyalis.*
Leaves rhombic-ovate. 5. *H. subrhomboideus.*
Disk yellow or light brownish.
Bracts broadly lanceolate, acute, appressed. 6. *H. pumilus.*
Bracts narrowly lanceolate, acuminate, more or less spreading or squarrose.
Leaves ovate. 7. *H. tuberosus.*
Leaves lanceolate.
Leaves rounded or obtuse at the base, subsessile. 8. *H. divaricatus.*
Leaves tapering at the base, petioled.
Stem more or less scabrous or hispid; upper leaves subsessile.
Leaves and stem very scabrous. 9. *H. Maximiliani.*
Leaves scabrous above, hirsute beneath; stem more or less hirsute.
Upper leaves mostly alternate and indistinctly triple-nerved. 10. *H. giganteus.*
Leaves usually all opposite, distinctly triple-nerved.
Leaves lanceolate, thick, often toothed, yellowish green, the lower distinctly petioled. 11. *H. subtuberosus.*
Leaves linear-lanceolate, dark green, entire, all subsessile. 12. *H. Cusickii.*
Stem, except the upper portion, glabrous and glaucous; leaves mostly all petioled.
Lower leaves coarsely toothed; bracts hirsute ciliate. 13. *H. grosse-serratus.*
All leaves distantly and minutely denticulate or subentire; bracts not ciliate or ciliate merely at the base.
Leaves lanceolate, often somewhat triple-ribbed.
Leaves all opposite; bracts ciliate on the margins. 11. *H. subtuberosus.*
Leaves mostly alternate; bracts ciliate only below the middle. 14. *H. fascicularis.*
Leaves narrowly linear-lanceolate, not triple-ribbed. 15. *H. Nuttallii.*

74. ENCÈLIA Adans.

Leaves densely white-tomentose. 1. *E. farinosa.*
Leaves hispidulous-canescent. 2. *E. virginensis.*

75. ENCELIÓPSIS (A. Gray) A. Nels.

Plant white-tomentose; heads radiate.
Stem scapiform; leaf-blades orbicular or spatulate; ligules 1–2.5 cm. long. 1. *E. nudicaulis.*
Stem leafy; leaf-blades rhombic-obovate; ligules 3.5–4 cm. long. 2. *E. argophylla.*
Plant hispid-scabrous; heads discoid. 3. *E. nutans.*

76. HELIANTHÉLLA T. & G.

Paleae of the receptacle soft and scarious.
Disk 2–3 cm. in diameter; leaves ovate to lanceolate, thin, not strongly reticulate. 1. *H. quinquenervis.*
Disk less than 2 cm. wide; leaves oblanceolate to linear, strongly reticulate.

Disk about 1.5 cm. wide, yellow; bracts linear-lanceolate, subequal, in about 2 series. 2. *H. Parryi.*
Disk about 1 cm. broad, purple; bracts unequal, in 3–4 series.
Ligules 5–6 mm. long. 3. *H. microcephala.*
Ligules more than 1 cm. long. 4. *H. scabra.*
Paleae of the receptacle firm-chartaceous.
Stem more or less hirsute, rarely glabrous; leaves thin, not strongly reticulate. 5. *H. Douglasii.*
Stem more or less scabrous-puberulent; leaves rather firm and reticulate. 6. *H. uniflora.*

77. XIMENÈSIA Cav. 1. *X. exauriculata.*

78. COREÓPSIS L. Tickseed.

Leaves pinnatifid.
Achenes winged. 1. *C. Atkinsoniana.*
Achenes wingless. 2. *C. tinctoria.*
Leaves simple. 3. *C. lanceolata.*

79. BÌDENS L. Beggar-ticks, Bur-marigold.

Achenes flat, obovate or cuneate; leaves or segments broad.
Leaves pinnately 3–5-foliolate.
Outer bracts 4–8; achenes nearly black. 1. *B. frondosa.*
Outer bracts 10–16; achenes brown. 2. *B. vulgata.*
Leaves simple.
Heads discoid, erect; corolla 4-toothed; achenes not tubercled. 3. *B. comosa.*
Heads usually radiate, nodding; corolla 5-toothed.
Outer bracts not much longer than the inner; achenes not corky on the angles. 4. *B. prionophylla.*
Outer bracts surpassing the rays; achenes with corky angles. 5. *B. glaucescens.*
Achenes linear, tetragonal; leaf-segments small.
Divisions of the leaves oblong or lanceolate. 6. *B. Bigelovii.*
Divisions of the leaves linear. 7. *B. tenuisecta.*

80. THELESPÉRMA Less.

Heads radiate.
Leaf-segments linear-filiform, 1 mm. or less wide.
Annual or biennial; outer bracts subulate-linear, more than half as long as the inner. 1. *T. trifidum.*
Perennial from a rootstock; outer bracts linear-lanceolate, half as long as the inner or less. 2. *T. tenue.*
Leaf-segments linear, over 1 mm. wide; plant perennial or the first only biennial.
Plant with a taproot, leafy throughout. 3. *T. intermedium.*
Plant with a creeping rootstock or woody caudex, leafy only near the base.
Involucre not cleft below the middle; throat of the disk-flowers campanulate, shorter than the lobes. 4. *T. ambiguum.*
Involucre cleft below the middle; throat of the disk-flowers cylindraceous, longer than the lobes. 5. *T. subnudum.*
Heads discoid; perennials, with a rootstock or woody caudex.
Plant less than 2 dm. high; involucre with very broad scarious margins. 6. *T. marginatum.*
Plants 3–6 dm. high; involucre with very narrow scarious margins. 7. *T. gracile.*

81. PTILONÉLLA Nutt. 1. *P. scabra.*

82. MÀDIA Molina.

Ray-flowers 5–12; heads not glomerate.
Heads on short branches, racemosely disposed. 1. *M. racemosa.*
Heads on long branches, more corymbose. 2. *M. dissitiflora.*
Ray-flowers 2–5, or none; heads glomerate. 3. *M. glomerata.*

83. HARPAECÁRPUS Nutt. 1. *H. exiguus.*

84. HEMIZONÈLLA A. Gray. 1. *H. minima.*

85. LAGOPHÝLLA Nutt. 1. *L. ramosissima.*

86. BLEPHARIPÁPPUS Hook. 1. *B. glandulosus.*

87. PSILÓSTROPHE DC. Paper Flower.

Stem merely sparingly villous or floccose, not densely white-pannose.
Squamellae of the pappus one-third as long as the disk-corollas, ovate, mostly obtuse; leaves broadly spatulate; ligules 8–12 mm. long, indistinctly nerved. 1. *P. Bakeri.*
Squamellae of the pappus one-half as long as the disk-corollas, lanceolate, acute or acuminate; ligules 5–8 mm. long, distinctly veined.

Leaves oblanceolate, loosely villous; heads short-peduncled. 2. *P. Tagetinae.*
Upper leaves linear or linear-oblanceolate, glabrate; heads slender-peduncled. 3. *P. sparsiflora.*
Stem densely white-pannose. 4. *P. Cooperi.*

88. BAILÈYA Harv. & Gray. WILD MARIGOLD.

Plant leafy throughout; annual. 1. *B. pleniradiata.*
Plant naked above, almost scapose; biennial. 2. *B. multiradiata.*

89. MONÓTHRIX Torr. 1. *M. Stansburii.*

90. PERICÒME A. Gray. 1. *P. caudata.*

91. PICRADENIÓPSIS Rydb. 1. *P. oppositifolia.*

92. AMAURIÓPSIS Rydb. 1. *A. dissecta.*

93. PLATYSCHKÙRIA (A. Gray) Rydb.

Stem scapiform or nearly so; leaves firm, oval to lanceolate. 1. *P. integrifolia.*
Stem leafy; leaves thin, oblong. 2. *P. oblongifolia.*

94. HÚLSEA T. & G. 1. *H. carnosa.*

95. CEPHALOBÉMBIX Rydb. 1. *C. neomexicana.*

96. HYMENOPÁPPUS L'Her.

Throat of the corolla campanulate, 1–2 mm. long, not over twice as long as the lobes.
Pappus over 1 mm. long, equalling the corolla-tube or nearly so.
Stem 3–6 dm. high, leafy throughout; heads numerous.
Plant sparingly and loosely floccose; leaves glabrate in age. 1. *H. tenuifolius.*
Plant densely tomentose; leaves permanently tomentose. 2. *H. tomentosus.*
Stem less than 3 dm. high.
Stem-leaves much reduced; stem white-tomentose or nearly so; heads few. 3. *H. scaposus.*
Stem-leaves not much reduced; stem sparingly grayish-tomentose. 5. *H. cinereus.*
Pappus 1 mm. or less long, much shorter than the corolla-tube; stem-leaves and heads few.
Pappus not hidden by the hairs of the achenes.
Stem permanently densely white-tomentose; achenes silky. 4. *H. arenosus.*
Stem sparingly grayish-tomentose, glabrate in age; achenes loosely villous. 5. *H. cinereus.*
Pappus hidden by the hairs of the achenes, or sometimes none.
Leaflets glabrate in age, at least above; ultimate segment 5–30 mm. long. 6. *H. filifolius.*
Leaves permanently densely white-tomentose; ultimate segments short, 1–5 mm. long. 7. *H. luteus.*
Throat of the corolla cylindro-campanulate, 1.5–4 mm. long, 3–4 times as long as the lobes.
Pappus equalling the corolla-tube; plant dwarf.
Heads less than 1 cm. high and broad; corolla-tube 1.5–2 mm. long; stem not woolly at the base. 8. *H. parvulus.*
Heads over 1 cm. high and 1.5 cm. broad; corolla-tube 3–4 mm. long; stem woolly at the base.
Bracts more or less rose- or purple-tinged. 9. *H. lugens.*
Bracts yellow-tinged. 3. *H. scaposus.*
Pappus shorter than the corolla-tube; throat 3–4 mm. long; plant 2–4 dm. high.
Stem leafy at least half its height, decidedly woolly at the base. 10. *H. eriopodus.*
Stem leafy only at the base, not conspicuously woolly. 11. *H. macroglottis.*

97. LEUCÁMPYX A. Gray. WILD COSMOS. 1. *L. Newberryi.*

98. OTHÀKE Raf.

Heads radiate; leaves lanceolate to linear-lanceolate. 1. *O. sphacelata.*
Heads discoid; leaves narrowly linear. 2. *O. macrolepis.*

99. RIGIOPÁPPUS A. Gray. 1. *R. leptocladus.*

100. CHAMAECHAENÁCTIS Rydb. 1. *O. scaposa.*

101. CHAENÁCTIS DC. MORNING BRIDES.

Annuals.
Corollas yellow; pappus of minute callous squamellae. 1. *C. Nevii.*
Corollas white or flesh-colored; pappus of well developed squamellae.
Stamens partly exserted; bracts all appressed.
Involucral bracts acuminate; receptacle usually somewhat bristly. 2. *C. carphoclinia.*

Involucral bracts obtuse or merely acute; receptacle naked.
Leaves bipinnatifid. 3. *C. stevioides.*
Leaves simple, spatulate-linear. 4. *C. Cusickii.*
Stamens included; some of the outer bracts with spreading tips. 5. *C. macrantha.*

Perennials.
Leafy-stemmed plants.
Plant densely white-floccose.
Leaves mostly basal, broadly obovate in outline, with approximate divergent divisions; branches of the inflorescence usually divergent at the base and curved upwards. 6. *C. brachiata.*
Leaves scattered, ovate or lanceolate in outline; branches of the inflorescence ascending or erect, strict.
Plant 1–3 dm. high, not fruticulose; leaves regularly pinnatifid. 7. *C. achilleaefolia.*
Plant 3–4 dm. high.
Leaves narrow, mostly regularly pinnatifid; plant often fruticulose at the base. 8. *C. imbricata.*
Leaves broader, interruptedly pinnatifid, with smaller segments interposed between the larger ones; plant not fruticulose. 9. *C. cheilanthoides.*
Plant sparingly floccose, in age greener and glabrate.
Squamellae about half as long as the corolla; low perennials, 1–2 dm. high, branched at the caudex. 10. *C. humilis*
Squamellae at least two-thirds as long as the corollas.
Bracts shorter than the disk; stem 2–4 dm. high; biennials with a taproot. 11. *C. Douglasii.*
Bracts equalling the disk; stems 1–2 dm. high, from a cespitose rootstock. 12. *C. pedunculariа.*
Subscapose perennials, with rosulate leaves and nearly naked peduncles.
Leaves oblanceolate, elliptic, or linear in outline; plants with a cespitose caudex.
Inner bracts acuminate; leaf-blades narrowly lanceolate in outline. 13. *C. minuscula.*
Inner bracts merely acute; leaf-blades oblanceolate or oblong in outline. 14. *C. alpina.*
Leaf-blades obovate-cuneate or flabellate in outline; plant with a cespitose rootstock. 15. *C. Evermannii.*

102. **ERIOPHÝLLUM** Lag. Woolly Yellow Daisy.

Leaves entire or merely the earlier ones toothed at the apex.
Achenes glabrous or nearly so. 1. *E. pedunculatum.*
Achenes decidedly pubescent or glandular.
Leaves narrowly linear-oblanceolate or linear. 2. *E. gracile.*
Leaves oblanceolate or obovate. 3. *E. integrifolium.*
Leaves more or less lobed or dissected.
Achenes glabrous.
Bracts acuminate, surpassing the disk. 4. *E. multiflorum.*
Bracts abruptly acute, not surpassing the disk. 5. *E. lanatum.*
Achenes hairy. 6. *E. Watsoni.*

103. **ANTHERÓPEAS** Rydb. Daisy Dwarf.

Pappus squamellae all oval or obovate, obtuse; leaves broadly spatulate or obovate; ligules yellow or reddish. 1. *A. Wallacei.*
Pappus squamellae of the angles narrow, linear-lanceolate or linear; leaves linear or nearly so; ligules white. 2. *A. lanosum.*

104. **SYNTRICHOPÁPPUS** A. Gray. 1. *S. Fremontii.*

105. **TETRANEÙRIS** Greene.

Heads sessile among the leaves. 1. *T. depressa.*
Heads distinctly peduncled.
Stems scapiform, leafy only at the base.
Leaves appressed-silky.
Leaves not strongly 3-nerved on the broadened bases.
Leaves spatulate or oblanceolate, 2–4 cm. long; scape stout, 5–10 cm. high. 2. *T. septentrionalis.*
Leaves linear or linear-oblanceolate; scape 10–20 cm. high.
Leaves silvery-silky; ligules 6–8 mm. long. 3. *T. acaulis.*
Leaves greenish, sparingly silky; ligules 8–10 mm. long. 4. *T. simplex.*
Leaves strongly 3-nerved on the broadened bases, narrowly linear-oblanceolate. 5. *T. trinervata.*
Leaves loosely villous or glabrate.
Leaves, scape, and involucre decidedly villous.
Involucre more than 1 cm. broad; scape 3–8 cm. long; plant densely cespitose-pulvinate; leaves not conspicuously broad-based. 6. *T. lanigera.*
Involucre less than 1 cm. broad; scape 1–3 cm. (rarely 3–5 cm.) long; plant loosely cespitose; leaves conspicuously broad-based. 7. *T. brevifolia.*

Leaves glabrous or sparingly villous; scape finely pubescent or villous (long-villous only in *T. Torreyana*).
Branches of the caudex decidedly villous at the ends, with long, at first white, but later brownish hairs.
Pappus-scales lanceolate, acuminate, not awned; scape villous. 8. *T. Torreyana.*
Pappus-scales oval, awned; scape silky.
Bracts oval. 9. *T. arizonica.*
Bracts linear-oblong. 10. *T. Crandallii.*
Branches of the caudex not conspicuously villous.
Bases of the leaves not wider than the oblanceolate or almost linear blades; branches of the caudex short and stout.
Leaves glabrous, scarcely punctate; bracts slightly shorter than the disk; ligules not strongly nerved. 11. *T. epunctata.*
Leaves long-hairy, distinctly punctate; bracts three-fourths as long as the disk; ligules strongly nerved. 12. *T. angustifolia.*
Bases of the leaves 2–4 times as wide as the linear leaf-blades; branches of the caudex or rootstock elongate. 13. *T. fastigiata.*
Stems 2–3 dm. high, with 2–6 stem-leaves.
Basal leaves oblanceolate to linear-oblanceolate, more than 5 mm. wide; involucre hemispheric. 14. *T. leptoclada.*
Basal leaves narrowly linear-oblanceolate, less than 5 mm. wide; involucre narrower. 15. *T. Ivesiana.*

106. RYDBÉRGIA Greene.

Basal leaves all dissected; plant villous. 1. *R. grandiflora.*
Basal leaves, at least some of them, simple; plant more glabrate. 2. *R. Brandegei.*

107. HYMENÓXYS Cass. Colorado Rubber Plant.

Perennials or biennials; inner bracts fimbriate or erose, abruptly acute, acuminate, or mucronate, unlike the outer ones; disk-corollas not expanded at the mouth.
Plant low, perennial, usually with a multicipital caudex; outer bracts united at least one-third their length; plant long-hairy on the basal leaf-bases.
Outer bracts not strongly thickened on the back.
Outer bracts united to the middle; free portions ovate or ovate-lanceolate. 1. *H. Richardsonii.*
Outer bracts united about a third their length; free portions narrowly lanceolate.
Involucre 10–15 mm. broad; ligules 10–18 mm. long; plant 1–3 dm. high. 2. *H. macrantha*
Involucre 8–10 mm. broad; ligules 5–8 mm. long; plant less than 1 dm. high. 3. *H. pumila.*
Outer bracts strongly thickened on the back, subcarinate.
Heads few, often solitary; ligules nearly rectangular-oblong. 4. *H. Macounii.*
Heads several; ligules decidedly cuneate.
Ligules light yellow, at least twice as long as wide; pappus-squamellae aristate-pointed. 5. *H. floribunda.*
Ligules orange, half longer than wide; pappus-squamellae acute or acuminate. 6. *H. Earlei.*
Plant tall, biennial or short-lived perennials; outer bracts united only at the base.
Leaves all dissected into narrowly linear divisions.
Leaves of the stem very numerous, more or less lepidote-pubescent; segments narrow, rarely more than 1 mm. wide.
Plant low, densely canescent; heads 1–3; squamellae not more than half as long as the corolla, not subulate-tipped. 7. *H. canescens.*
Plant tall, greener; heads several or many; squamellae about half as long as the corolla, subulate-tipped. 8. *H. biennis.*
Leaves of the stem not conspicuously numerous, glabrate and green; segments 1–3 mm. wide. 9. *H. Greenei.*
Leaves, at least the lower ones, entire or with broad lobes 3–8 mm. wide. 10. *H. helenioides.*
Annuals, with numerous heads; inner bracts not very different from the outer, neither abruptly acute nor mucronate, nor evidently erose; throat of the disk-corollas somewhat funnelform. 11. *H. odorata.*

108. FLAVÈRIA Juss.

1. *F. campestris.*

109. DUGÁLDIA Cass.

1. *D. Hoopesii.*

110. HELÈNIUM L. Sneezeweed.

Plant scabrous-puberulent throughout; bracts about equalling the disk; ligules about 1 cm. long or less. 1. *H. montanum.*
Plant glabrous or minutely puberulent; bracts much longer than the disk; ligules generally over 1 cm. long. 2. *H. macranthum.*

111. GAILLÀRDIA Foug. Blanket-flower.

Lobes of the disk-corollas acuminate, covered with moniliform hairs.
Plant perennial; ligules usually wholly yellow. 1. *G. aristata.*

Plant annual; ligules partly or wholly purple. 2. *G. pulchella.*
Lobes of the disk-corollas short and broad, acute or obtuse.
Plant hirsute or villous; leaves neither coriaceous nor conspicuously punctate.
Pappus-squamellae lanceolate, awn-pointed.
Disk purple; leaf-segments more or less ascending.
Leaves, except the earliest ones, pinnatifid with narrow divisions. 3. *G. pinnatifida.*
Leaves entire or with broad divisions.
Perennials with a thick root. 4. *G. gracilis.*
Annuals or biennials; root not thick. 5. *G. Mearnsii.*
Disk pale yellow; leaf-segments divaricate. 6. *G. flava.*
Pappus-squamellae elliptic, muticous, or with a very short awn-tip; disk yellow.
Squamellae with a distinct midrib, usually minutely awn-tipped. 7. *G. Pringlei.*
Squamellae without midrib and awn-tip. 8. *G. arizonica.*
Plant minutely and sparingly puberulent; caudex thick and woody; leaves coriaceous, conspicuously punctate.
Plant distinctly caulescent; leaf-blades spatulate to linear. 9. *G. spathulata.*
Plant acaulescent, scapose; basal leaf-blades broadly obovate. 10. *G. Parryi.*

112. BOÈBERA Willd. Fetid Marigold. 1. *B. papposa.*

113. THYMOPHÝLLA Lag. Tiny Tim.

Annuals; pappus-squamellae muticous. 1. *T. aurea.*
Perennials; pappus-squamellae awn-tipped. 2. *T. Thurberi.*

114. PÉCTIS L. Lemon-scent.

Flowers subsessile; pappus of a crown of 4 or 5 connate squamellae, sometimes with 1 or 2 additional awns. 1. *P. angustifolia.*
Flowers distinctly peduncled; pappus at least of the disk-flowers of 12–18 barbellate bristles. 2. *P. papposa.*

115. ACHILLÈA (Vaillant) L. Yarrow, Milfoil.

Leaves pinnatifid to tripinnatifid.
Bracts with dark brown, almost black margins.
Involucre 5–6 mm. high, 4–5 mm. broad.
Ultimate segments of the leaves long and linear, not thickened at the apex; bracts all acute. 1. *A. borealis.*
Ultimate segments of the leaves ovate, lanceolate, or oblanceolate, short, often thickened at the apex; bracts except the outermost obtuse.
Upper leaves 1–2 cm. broad, with spreading not densely crowded divisions. 2. *A. Palmeri.*
Upper leaves 5–10 mm. broad, with short densely crowded divisions. 3. *A. fusca.*
Involucre 3.5–4 mm. high, about 3 mm. broad. 4. *A. subalpina.*
Bracts with light brown, yellowish, or straw-colored margins.
Involucre 5–8 mm. high, 4 mm. broad or more.
Ultimate divisions of the leaves linear, not thickened, spreading, not crowded; bracts with light brown margins. 5. *A. californica.*
Ultimate divisions lanceolate or ovate, usually thickened towards the apex, ascending and crowded; bracts and their margins of the same color, light yellowish or straw-colored. 6. *A. pacifica.*
Involucre 4–4.5, rarely 5 mm. high, 2.5–4 mm. broad.
Ultimate leaf-segments linear; rachis merely margined.
Ligules 2.5–4 mm. long; leaf-segments ascending, crowded. 7. *A. lanulosa.*
Ligules 1.5–2.5 mm. long; leaf-segments more or less spreading, not crowded. 8. *A. occidentalis.*
Ultimate leaf-segments ovate or lanceolate; rachis distinctly winged. 9. *A. millefolium.*
Leaves serrate or incised, not pinnatifid. 10. *A. multiflora.*

116. ANTHÈMIS L. Corn Chamomile. 1. *A. arvensis.*

117. MARÙTA Cass. May Weed, Dog Fennel, Dog Chamomile. 1. *M. Cotula.*

118. CHAMOMÍLLA (Hall.) Gilib. Chamomile, Pineapple-weed, Green Dog-fennel. 1. *C. suaveolens.*

119. LEUCÁNTHEMUM (Tourn.) Mill. Ox-eye Daisy. 1. *L. Leucanthemum.*

120. TANACÈTUM (Tourn.) L. Tansy. 1. *T. vulgare.*

121. SPHAEROMÈRIA Nutt.

Plant shrubby, 2–4 dm. high, glabrous; heads several, corymbose. 1. *S. diversifolia.*
Plant with cespitose caudices, 1.5 dm. or less high, silvery-canescent; heads solitary or in a small cluster.

Heads few, clustered.
Heads more or less peduncled; basal leaves obovate-cuneate, with 3–5 round lobes at the apex. 2. *S. argentea.*
Heads sessile in a capitate cluster; basal leaves once or twice ternately divided into linear or oblong divisions. 3. *S. capitata.*
Heads solitary; basal leaves simple, linear, or ternately cleft at the apex into linear divisions. 4. *S. simplex.*

122. PICROTHÁMNUS Nutt. 1. *P. desertorum.*

123. ARTEMÍSIA L. Wormwood, Mugwort, Cudweed, Sage Brush.

Disk-flowers sterile, their styles undivided or with short erect branches; receptacle naked.
Annual or perennial herbs; style of the disk-flowers undivided, ending in a cup-shaped penicillate appendix. I. Dracunculoides.
Low shrubs or undershrubs; style of the disk-flowers usually more or less 2-cleft, each branch erect with truncate penicillate or erose apex. II. Filifoliae.
Disk-flowers fertile, their styles 2-cleft; branches more or less recurved.
Marginal pistillate flowers present.
Receptacle hairy.
Heads numerous, usually paniculate; plant more or less shrubby at the base. III. Frigidae.
Heads few, 1–12, racemose; plant low, herbaceous, from a rootstock, 1–3 dm. high IV. Lanatae.
Receptacle naked.
Annual or biennial herbs with bipinnatifid leaves. V. Annuae.
Perennials.
Leaves silvery or silky or glabrate, but not tomentose beneath.
Plants low, herbaceous perennial, with rootstocks; heads many-flowered, nodding in a simple racemose inflorescence; leaves divided into linear or oblong divisions. VI. Norvegicae.
Plants more or less shrubby at the base; heads paniculate.
Leaves pinnately dissected into narrow divisions (glabrate forms of *A. Abrotanum, A. graveolens* and *A. tenuis*).
Leaves cuneate, 3-toothed at the apex or the upper entire. XIII. Bigelovianae.
Leaves more or less tomentose beneath.
Leaves not dissected into narrowly linear more or less divergent divisions; these, if narrow, very few, directed forward and entire.
Leaves greener and glabrate above, at least in age.
Heads 60–100-flowered; leaves twice pinnatifid with obtuse divisions, the lower long-petioled. VII. Franserioides.
Heads 5–50-flowered; leaves simple or once pinnatifid, or if bipinnatifid, with acute lobes and sessile or short-petioled.
Leaves entire or with a few lobes, if dissected to near the midrib, the lobes rather broad [except in *A. mexicana*]. VIII. Vulgares.
Leaves deeply dissected to near the midrib; divisions linear or oblong, usually more or less cleft. X. Discolores.
Leaves white-tomentose on both sides. IX. Gnaphaloides.
Leaves once or twice dissected into linear or filiform, more or less spreading divisions.
Leaf-segments broadly linear or linear-lanceolate, usually again lobed or toothed. X. Discolores.
Leaf-segments narrowly linear or filiform, mostly revolute.
Leaves once pinnatifid; plant herbaceous; style of the ray-flowers long-exserted. XI. Wrightianae.
Leaves twice pinnatifid; plant suffruticose; style of the ray-flowers short-exserted. XII. Ponticae.
Marginal pistillate flowers wanting; receptacle naked.
Shrubs 1–50 dm. high; leaves canescent, not with raised midribs.
Heads in terminal panicles; leaves entire, 3–5-toothed to 3–5-divided at the apex. XIV. Tridentatae.
Heads axillary; leaves pinnatifid into linear divisions. XV. Rigidae.
Dwarf undershrubs, scarcely more than 1 dm. high; leaves pinnatifid into linear-spatulate divisions, green, with the ribs raised beneath. XVI. Pygmaeae.

I. Dracunculoides.

Leaves all entire or the lower 3-fid.
Leaves densely pubescent when young. 1. *A. glauca.*
Leaves glabrous.
Involucre 3–4 mm. broad; lower stem-leaves 3–12 mm. wide; heads 30–100-flowered; outermost involucral bracts almost as long as the inner. 2. *A. aromatica.*
Involucre 2–3 mm. broad; leaves 1–3 mm. wide; heads 20–40-flowered; outer bracts much shorter than the inner. 3. *A. dracunculoides.*
Leaves, at least the lower, pinnatifid or bipinnatifid.
Heads very small, 2–3 mm. broad, numerous in large leafy panicles; plants mostly tall, 3–10 dm. high.

Biennials; heads mostly erect; outer bracts acute.
Plant glabrous or nearly so. 4. *A. caudata.*
Plant decidedly pubescent. 5. *A. Forwoodii.*
Perennials, with a rootstock or caudex; heads nodding at least at first.
Plant 3–10 dm. high; stem leafy.
Stem tall, very leafy, 4–10 dm. high; bracts acute or acutish. 6. *A. pacifica.*
Stem lower, 3–5 dm. high; stem-leaves rather small and scattered; bracts obtuse or rounded at the apex. 7. *A. camporum.*
Plant less than 1 dm. high; stem scapiform; stem-leaves minute. 18. *A. minuta.*
Heads larger, 4–5 mm. broad, not very numerous (except in *A. Bourgeauana*), in narrow spike-like panicles; plants low, rarely 3 dm. high.
Involucral bracts glabrous or nearly so; disk-corollas glabrous. 8. *A. MacCallae.*
Involucral bracts more or less villous; disk-corollas usually with a few hairs on the lobes.
Plant 3–4 dm. high; heads very numerous, in a dense panicle. 9. *A. Bourgeauana.*
Plant 1–3 dm. high; heads fewer, usually a spike-like panicle or racemose. 10. *A. spithamaea.*

II. FILIFOLIAE.

Taller shrubs, 3–10 dm. high, with numerous heads in leafy panicles; heads 3–7-flowered. 11. *A. filifolia.*
Low undershrubs, less than 1.5 dm. high, with racemose inflorescence; heads 10–15-flowered.
Leaves ternate or biternate. 12. *A. pedatifida.*
Leaves pinnatifid with 5–7 divisions. 18. *A. minuta.*

III. FRIGIDAE.

Plant tall, 6–10 dm. high, erect; leaves twice or thrice pinnatifid. 13. *A. Absinthium.*
Plant lower, 2–4 dm. high, often decumbent at base; leaves twice ternate. 14. *A. frigida.*

IV. LANATAE.

Basal leaves twice pinnatifid into linear divisions; stem-leaves pinnate; heads 5–12. 15. *A. scopulorum.*
Basal leaves pinnatifid into 3–5 linear-oblanceolate approximate divisions; stem-leaves ternately cleft or entire; heads 1–4. 16. *A. Pattersoni.*

V. ANNUAE.

One species. 17. *A. biennis.*

VI. NORVEGICAE.

Heads 6–10 mm. broad, usually more than 40-flowered; corollas hairy or rarely glabrous; bracts with fuscous margins.
Plant more or less pubescent, at least on the leaves and peduncles.
Plant silvery-silky; basal leaves 6 cm. long or less, pinnatifid or bipinnatifid with few divisions.
Plant less than 1 dm. high; leaves 1–1.5 cm. long; involucral bracts with inconspicuous light brown margins, slightly tomentose, soon glabrous. 18. *A. minuta.*
Plant 1–3 dm. high; leaves 2–6 cm. long; involucral bracts with conspicuous dark brown or blackish scarious margins. 19. *A. Tyrrellii.*
Plant green; leaves twice pinnatifid, the basal ones more than 1 cm. long.
Leaves and stem decidedly hairy; inner bracts ovate, acute, with narrowly lanceolate green center. 20. *A. saxicola.*
Leaves sparingly pubescent or glabrate; stem glabrous or nearly so; inner bracts obovate, obtuse or rarely acutish, with broadly lanceolate green center. 21. *A. arctica.*
Plant glabrous. 22. *A. laevigata.*
Heads 5–6 mm. broad, 30–40-flowered; corolla glandular-granuliferous; plant glabrous; bracts with light brown margins. 23. *A. Parryi.*

VII. FRANSERIOIDES.

One species. 24. *A. franserioides.*

VIII. VULGARES.

Leaf-segments again divided or lobed.
Inflorescence much branched, pyramidal; heads very numerous; involucre campanulate, 4 mm. high, 10–30-flowered; leaf-segments obovate in outline. 25. *A. vulgaris.*
Inflorescence narrow, cylindric; heads fewer; involucre hemispheric, 3 mm. high, 25–35-flowered; leaf-segments lanceolate, short, acute. 26. *A. incompta.*
Leaves or their segments entire or nearly so.
Heads not very numerous, comparatively large, 25–50-flowered; involucre hemispheric.
Inflorescence spike-like; suffruticose with a woody base; leaves coarse-toothed. 28. *A. Leibergii.*
Inflorescence open-paniculate.
Leaves lanceolate, thin, deeply lobed; involucre glabrous or nearly so. 27. *A. elatior.*

Leaves linear-lanceolate, entire or short-lobed, thicker, sparingly floccose above; involucre arachnoid. 29. *A. arachnoidea.*

Heads very numerous in dense compound panicles (except in *A. Lindleyana*), 5–25-flowered; involucre campanulate or ellipsoid.

Upper leaves lanceolate or oblanceolate, usually more than 4 mm. wide.

Involucre 4 mm. high; leaves large, 5–15 cm. long, lanceolate or ovate-lanceolate in outline, with very few divisions, directed forward.

Lower leaves deeply divided into more or less falcate divisions. 30. *A. Hookeriana.*

Lower leaves with shorter lobes or teeth directed forward.

Heads nodding in anthesis, 15–25-flowered; involucre rounded-campanulate. 31. *A. Douglasiana.*

Heads erect in anthesis, 5–15-flowered; involucre oblong or subcylindric. 32. *A. Herriotii.*

Involucre 3 mm. high; leaves shorter; lobes of the lower leaves often spreading.

Leaves of a lanceolate type; involucre campanulate, usually less than 3 mm. broad. 33. *A. ludoviciana.*

Leaves of a cuneate type; involucre hemispheric, 3–4 mm. broad.

Leaves with 3–5 ovate teeth at the apex, dark green. 34. *A. cuneata.*

Leaves with 3–7 lanceolate lobes, yellowish green. 49. *A. rhizomata.*

Upper leaves linear or narrowly linear-oblanceolate, less than 4 mm. wide.

Heads numerous, paniculate; leaves usually more than 5 cm. long; plant not suffruticose at the base.

Inflorescence loose; branches long and heads scattered.

Leaves entire, or the lower coarsely toothed or with short lanceolate lobes. 35. *A. silvicola.*

Leaves, at least some of them, with long narrow, alternate, salient, falcate lobes. 36. *A. falcata.*

Inflorescence dense and narrow; branches short; heads crowded; stem-leaves mostly pinnatifid.

Bracts and upper surface of the leaves nearly glabrous; lower surface minutely tomentulose. 37. *A. potens.*

Bracts and upper surface of the leaves floccose; lower surface white-tomentose. 38. *A. Underwoodii.*

Heads less numerous, in narrow spikes or spike-like panicles; leaves narrow, usually less than 5 cm. long, the lower toothed or rarely lobed towards the apex, the upper entire, linear or nearly so; plant suffruticose at the base. 39. *A. Lindleyana.*

IX. Gnaphaloides.

Leaves all entire or the basal ones merely toothed.

Involucre 3–4 mm. high, 2–3.5 mm. broad; heads less than 25-flowered.

Corollas dark brown or purplish; leaves usually less tomentose above, the lower serrate towards the apex. 40. *A. gnaphaloides.*

Corollas light brown or yellow; leaves equally white-tomentose on both sides.

Involucre 2–2.5 mm. broad; leaves very narrow, linear or lance-linear, acute. 41. *A. pabularis.*

Involucre 2.5–3.5 mm. broad; leaves broader, if lance-linear, more or less acuminate.

Upper leaves ovate to lanceolate, acute; heads densely crowded and usually erect. 42. *A. Purshiana.*

Upper leaves lanceolate to lance-linear, acuminate; heads less crowded, mostly spreading. (Entire-leaved forms of) 46. *A. diversifolia.*

Involucre 4–5 mm. high, 4–7 mm. broad; heads 25–40-flowered (in *A. longifolia* sometimes 20–25-flowered).

Heads nodding or spreading; leaves equally floccose on both sides, not revolute, acute.

Heads nodding, rather long-peduncled on elongate racemiform branches; leaves linear. 43. *A. pudica.*

Heads spreading, subsessile or short-peduncled on shorter branches; stem-leaves lanceolate. 44. *A. argophylla.*

Heads erect, peduncled; stem-leaves linear-lanceolate, caudate-attenuate, often revolute-margined and greener above. 45. *A. longifolia.*

Leaves, at least the lower ones, more or less lobed or divided.

Lower leaves with simple divisions.

Lower leaves with long and narrow lobes.

Involucre 3–4 mm. high, 3–4 mm. broad. 46. *A. diversifolia.*

Involucre 4–5 mm. high, 5–7 mm. broad. 44. *A. argophylla.*

Lower leaves with short and broad often salient lobes.

Leaves 5–8 cm. long; involucre 4–5 mm. high and about as broad. 47. *A. platyphylla.*

Leaves 1–5 cm. long; involucre 3–4 mm. high, 2–3 mm. broad.

Stem simple up to the inflorescence.

Inflorescence dense and much branched; heads clustered. 48. *A. Brittonii.*

Inflorescence lax, narrow, spike-like, with short racemiform branches. 49. *A. rhizomata.*

Stem conspicuously branched, the branches ending in small simple or branched racemes. 50. *A. albula.*

Lower leaves and often the upper with narrow, again cleft or toothed, spreading divisions.

Heads 25–50-flowered; involucre 4–5 mm. high, 5–8 mm. broad.
Heads erect, borne singly on peduncles 1–12 mm. long; leaves equally tomentose on both sides. 51. *A. floccosa.*
Heads borne in small glomerules, sessile, only the terminal one erect; leaves less tomentose above. 52. *A. candicans.*
Heads 20–30-flowered; involucre 3 mm. high, 2.5–3.5 mm. broad. 53. *A. Flodmanii.*

X. DISCOLORES.

Leaves densely white-tomentose beneath, loosely floccose above, at least when young.
Heads very numerous in a branched leafy panicle; leaves not revolute-margined. 54. *A. discolor.*
Heads fewer, usually in a narrow spike-like or racemiform inflorescence; leaves revolute-margined. 55. *A. Michauxiana.*
Leaves minutely tomentulose beneath, glabrous above.
Heads hemispheric, nodding at least in anthesis. 56. *A. graveolens.*
Heads campanulate, erect in anthesis. 57. *A. tenuis.*

XI. WRIGHTIANAE.

Leaves sparingly pubescent or glabrous, green above.
Heads erect; involucre about 2 mm. broad. 58. *A. Wrightii.*
Heads nodding; involucre about 3 mm. broad. 59. *A. Bakeri.*
Leaves white-tomentose on both sides. 60. *A. Carruthii.*

XII. PONTICAE.

One species. 61. *A. Abrotanum.*

XIII. BIGELOVIANAE.

One species. 62. *A. Bigelovii.*

XIV. TRIDENTATAE.

Involucre 4–5 mm. high, 3–5 mm. broad; heads 7–15-flowered (rarely 5- or 6-flowered).
Leaves mostly entire; heads numerous in a dense but not spike-like panicle. 63. *A. cana.*
Leaves, at least some of them, 3–5-toothed at the apex; heads fewer in a narrow spike-like panicle.
Plant 1–3 dm. high; branches decumbent or spreading at the base. 64. *A. arbuscula.*
Plant about 5 dm. high, with erect strict branches. 65. *A. spiciformis.*
Involucre 2–4 mm. high, 2–2.5 mm. broad; heads 1–8-flowered.
Leaves, at least some of them, 3-toothed at the apex.
Shrubs 5–50 dm. high; heads numerous in ample panicles.
Leaves cuneate. 66. *A. tridentata.*
Leaves narrowly linear-cuneate or linear. 67. *A. angusta.*
Shrub 1–4 dm. high; heads fewer.
Heads glomerate in dense panicles; involucre turbinate. 62. *A. Bigelovii.*
Heads in simple, raceme-like panicles; involucre campanulate.
Heads 7–9-flowered; involucre densely canescent. 64. *A. arbuscula.*
Heads 1–6-flowered; involucre nearly glabrous. 68. *A. nova.*
Leaves 3-cleft into linear-filiform divisions. 69. *A. tripartita.*

XV. RIGIDAE.

One species. 70. *A. rigida.*

XVI. PYGMAEAE.

One species. 71. *A. pygmaea.*

124. PETASÌTES L. SWEET COLTSFOOT, BUTTERBUR.

Leaf-blades sagittate or cordate, pinnately veined (except in *P. vitifolia*).
Leaves not cleft.
Leaves repand-denticulate, with numerous teeth. 1. *P. sagittata.*
Leaves angulately and sinuately few-lobed. 2. *P. frigida.*
Leaves cleft one-third to one-half to the midrib; lobes dentate.
Leaves not broader than long; only one pair of lateral veins rising from the base. 3. *P. corymbosa.*
Leaves decidedly broader than long; two or more pairs of lateral veins rising from the base. 4. *P. vitifolia.*
Leaves round-reniform, pedately veined and lobed. 5. *P. palmata.*

125. CROCÍDIUM Hook. 1. *C. multicaule.*

126. PSATHYRÒTHES A. Gray. VELVET-ROSETTES.

Leaves not beset with long hairs.
Outer bracts obovate, larger than the inner; spreading tomentum long-villous. 1. *P. ramosissima.*
Outer bracts oblong, not longer than the inner, erect; tomentum fine, furfuraceous. 2. *P. annua.*
Leaves with scattered long-jointed hairs. 3. *P. pilifera.*

127. HAPLOÉSTES A. Gray. 1. *H. Greggii.*

128. ÁRNICA L. ARNICA.

Stem with several pairs of leaves, the upper not conspicuously reduced (except in *A. Parryi*); heads usually several.

Heads nodding in the bud, usually discoid. I. ERADIATAE.
Heads erect in bud, radiate.
Basal leaves cordate or ovate, long-petioled.
Pappus white, merely barbellate; involucre turbinate (except in *A. granulifera*), not conspicuously glandular-hirsute (except in *A. paniculata*).
Achenes densely hirsute; involucre densely villous at the base. II. CORDIFOLIAE.
Achenes glabrous, glandular-puberulent, or with a few scattered hairs above.
Involucre, peduncle, and achenes densely glandular-granuliferous.
Involucre hemispheric; disk about 15 mm. high. III. GRANULIFERAE.
Involucre turbinate; disk 10–12 mm. high. IV. GRACILES.
Involucre slightly villous at the base, scarcely glandular, turbinate; disk about 15 mm. high. V. LATIFOLIAE.
Pappus tawny or brownish, distinctly plumose; involucre distinctly glandular-hirsute. VI. DIVERSIFOLIAE.
Basal leaves lanceolate or oblanceolate, short-petioled.
Pappus distinctly plumose, brownish.
Achenes glandular-granuliferous; involucre glandular-granuliferous and somewhat hirsute; leaves narrowly linear-lanceolate, entire or nearly so. VII. LONGIFOLIAE.
Achenes pubescent, not glandular; involucre usually glandular-hirsute (villous in *A. gracilenta* and glandular-granuliferous in *A. arcana*). VIII. MOLLES.
Pappus merely barbellate, white or yellowish.
Leaves numerous, more or less grayish, the larger more than 7 cm. long; pappus yellowish; heads many. IX. FOLIOSAE.
Leaves rather few, green, the larger not more than 7 cm. long; pappus white; heads 1–3. X. ALPINAE.
Stem-leaves 1–3 pairs, the upper much reduced, linear or linear-lanceolate; heads 1–3.
Heads erect.
Involucre hemispheric, glandular-hirsute; pappus brown, plumose. XI. PEDUNCULATAE.
Involucres turbinate, villous at the base (glandular only in *A. arnoglossa*); pappus white, barbellate. X. ALPINAE.
Heads nodding in bud. XII. LESSINGIANAE.

I. ERADIATAE.

One species. 1. *A. Parryi.*

II. CORDIFOLIAE.

Heads numerous; involucre more or less glandular-hirsute; bracts linear. 2. *A. paniculata.*
Heads 1–3, rarely 5; involucre villous, only with subsessile glands.
Plant 2–4 dm. high; leaves thin, usually coarsely toothed; bracts oblanceolate.
Lower leaves with a close sinus, their teeth salient. 3. *A. grandifolia.*
Lower leaves with an open sinus, their teeth directed forward. 4. *A. cordifolia.*
Plant 1–2 dm. (rarely 3 dm.) high; leaves thick, subentire, or with a few teeth; bracts linear-lanceolate. 5. *A. pumila.*

III. GRANULIFERAE.

One species. 6. *A. granulifera.*

IV. GRACILES.

Upper leaves not linear.
Bracts linear-lanceolate; leaves thin, usually more or less dentate. 7. *A. gracilis.*
Bracts oblanceolate; leaves thick, usually entire. 8. *A. puberula.*
Upper stem-leaves linear, much reduced. 9. *A. arnoglossa.*

V. LATIFOLIAE.

Leaves decidedly hairy, especially above. 10. *A. Jonesii.*
Leaves nearly glabrous.
Achenes slightly glandular-granuliferous, and with a few scattered hairs above.
Leaves not saliently toothed, merely denticulate. 11. *A. ventorum.*
Leaves saliently and coarsely toothed. 12. *A. Menziesii.*
Achenes glabrous; leaves more or less toothed. 13. *A. latifolia.*

VI. DIVERSIFOLIAE.

Leaves thin, nearly glabrous. 14. *A. silvatica.*
Leaves thick, densely glandular-puberulent, at least above. 15. *A. diversifolia.*

VII. LONGIFOLIAE.

Involucre merely puberulent or glandular-granuliferous; leaves not caudate-attenuate; stem usually over 3 dm. high. 16. *A. longifolia.*
Involucre copiously hirsute, as well as puberulent; leaves caudate-acuminate. 17. *A. caudata.*

VIII. MOLLES.

Involucre villous, not at all glandular or viscid. 18. *A. macilenta.*
Involucre more or less glandular or viscid.
Involucre densely glandular-granuliferous, only with a few white hairs. 19. *A. arcana.*
Involucre decidedly villous or hirsute, as well as glandular.
Middle stem-leaves broadly ovate, less than 5 cm. long; stem 2–3 dm. high.

Involucre less than 1 cm. high, villous at the base, only slightly glandular; bracts broadly lanceolate. 20. *A. coloradensis.*
Involucre 12–15 mm. high, densely glandular-hirsute; bracts narrowly oblanceolate. 21. *A. ovata.*
Middle stem-leaves lanceolate, oblanceolate, or linear-lanceolate.
Bracts oblanceolate, abruptly acuminate. 22. *A. mollis.*
Bracts linear or lanceolate.
Stem-leaves more or less sharply dentate, except at the base.
Leaves nearly glabrous, except the margins.
Stem-leaves ovate-lanceolate, broad at the base. 23. *A. amplexifolia.*
Stem-leaves oblanceolate or narrowly lanceolate, narrowed at the base. 24. *A. Macounii.*
Leaves decidedly pubescent, both villous and glandular-granuliferous. 25. *A. rivularis.*
Stem-leaves entire, sparingly denticulate, densely glandular-puberulent. 26. *A. subplumosa.*

IX. Foliosae.

Pubescence of the leaves long and soft, villous.
Bracts obovate-oblanceolate, mostly obtuse. 27. *A. tomentulosa.*
Bracts oblong-lanceolate, acute.
Plant sparingly pubescent, with long flat hairs; leaves long-acute. 28. *A. Chamissonis.*
Plant densely pubescent with fine hairs; leaves acute or obtuse.
Leaves broadly oblanceolate or lanceolate. 29. *A. rhizomata.*
Leaves linear or lance-linear. 30. *A. foliosa.*
Pubescence of the leaves very short and fine.
Stem-leaves linear-lanceolate, usually entire or callous-denticulate; involucre rarely more than 1 cm. high.
Pubescence of the involucre and peduncle very short and fine. 31. *A. ocreata.*
Pubescence of the involucre and peduncle longer and coarser. 32. *A. celsa.*
Stem-leaves broadly lanceolate, more or less dentate; involucre usually more than 1 cm. high. 33. *A. rubricaulis.*

X. Alpinae.

Stem-leaves ovate. 20. *A. coloradensis.*
Stem-leaves linear to lanceolate.
Leaves glabrate in age, at least above.
Involucre and peduncle more or less glandular-puberulent; achenes hispidulous. 9. *A. arnoglossa.*
Involucre more or less villous, at least at the base; achenes canescent.
Leaves and lower part of the stem glabrous or nearly so; leaves mostly acute; bracts green.
Leaves strongly 3-ribbed. 34. *A. Rydbergii.*
Leaves faintly 3-ribbed. 35 *A tenuis.*
Leaves and stem villous when young; leaves mostly acuminate; bracts purple-tinged. 36. *A. alpina.*
Leaves densely villous-tomentose. 37. *A. tomentosa.*

XI. Pedunculatae.

Stem with tufts of brown wool at the base. 38. *A. pedunculata.*
Stem without tufts of wool at the base. 39. *A. fulgens.*

XII. Lessingianae.

One species. 40. *A. Louiseana.*

129. SENÈCIO L. Groundsel, Ragwort, Squaw-weed.

Perennials with a more or less developed rootstock or caudex; if the latter is less well-developed, it bears numerous fibrous-fleshy roots.
Heads more or less nodding.
Heads discoid; crown short, with fleshy-fibrous roots. I. Pudici.
Heads radiate; rootstock well developed. II. Amplectentes.
Heads not nodding.
Heads more than 15 mm. high and 20 mm. broad, solitary (seldom 2–3).
Plant low, less than 2 dm. high, with rootstocks; bractlets short. II. Amplectentes.
Plant tall, 3–5 dm. high, stout, with a short crown and a cluster of fleshy-fibrous roots.
Bractlets linear-filiform, almost equalling the involucre; bracts not black-tipped. XIX. Megacephali.
Bractlets short; bracts usually tipped with black. XVIII. Integerrimi.
Heads less than 15 mm. high and broad.
Plants equally leafy throughout.
Leaves or their divisions not narrowly linear or filiform.
Leaves merely toothed or entire, not pinnatifid.
Leaf-blades oval, elliptic, or obovate, usually obtusish; heads few; plants cespitose. III. Occidentales.
Leaf-blades triangular or ovate to linear-lanceolate, distinctly acute; heads usually many.
Leaf-blades, at least the lower ones, triangular or cordate; plants rowging in clumps, with fleshy-fibrous roots. IV. Triangulares.

Leaf-blades neither triangular nor cordate.
Plant tall, 5–15 dm. high; heads numerous; plants with rootstocks. V. SERRAE.
Plant low, 2–4 dm. high; heads few.
Heads radiate. XVI. CRASSULI.
Heads discoid. XVII. RAPIFOLII.
Leaves pinnatifid. VI. EREMOPHILI.
Leaves or their divisions linear-filiform; plants usually suffruticose at the base. VII. LONGILOBI.
Plants with the stem-leaves more or less reduced upwards.
Rootstock well developed, horizontal or ascending, woody.
Stem leafy, more than 2 dm. high.
Heads campanulate, rarely solitary.
Stem stout; rootstock not cespitose; leaves callous-denticulate or saliently dentate.
Heads discoid; leaves saliently dentate. XVII. RAPIFOLII.
Heads radiate; leaves callous-denticulate.
Leaves glabrous. VIII. GLAUCESCENTES.
Leaves tomentose. IX. FOLIOSI.
Stem slender; rootstock usually more or less cespitose; leaves neither callous-denticulate, nor saliently and closely dentate; stem-leaves in the larger forms usually pinnatifid.
Basal leaves entire, more or less white-tomentose. X. CANI.
Basal leaves, at least most of them, toothed or pinnatifid.
Leaves and stem more or less floccose, tardily becoming glabrate. XI. TOMENTOSI.
Leaves and stem glabrous or slightly floccose when young. XII. AUREI.
Heads turbinate, solitary. XIII. SUBNUDI.
Stem subscapose, less than 2 dm. high. XIV. ANDICOLAE.
Rootstock very short, erect, of short duration, with numerous fleshy-fibrous roots; leaves dentate or entire.
Tall bog-plants, 5–15 dm. high; basal leaves long-petioled. XV. HYDROPHILI.
Meadow or wood-plants, 2–5 dm. high; basal leaves comparatively short-petioled.
Leaves sharply and densely dentate. XVI. CRASSULI.
Leaves entire-margined or denticulate, seldom sinuate-dentate. XVIII. INTEGERRIMI.

Annuals
Plant branched, more or less viscid; heads discoid, or with minute rays. XX. VULGARES
Plant simple, more or less floccose; heads radiate. XXI. PALUSTRES.

I. PUDICI.

Heads 12–20 mm. high, broadly campanulate.
Auricles of the upper leaves small and entire; midvein of the leaves long-villous. 1. *S. accidens.*
Auricles of the upper leaves large and usually toothed; midvein of the leaves not conspicuously villous. 2. *S. chloranthus.*
Heads 8–10 mm. high, narrowly campanulate. 3. *S. pudicus.*

II. AMPLECTENTES.

Stem 2 dm. or more high, leafy; leaves acute.
Stem-leaves with clasping bases; stem high, slightly floccose when young. 4. *S. amplectens.*
Stem-leaves not clasping, usually short-petioled. 5. *S. pagosanus.*
Stem less than 2 dm. high.
Rootstock hard, scaly at the top; upper stem-leaves sessile. 6. *S. seridophyllus.*
Rootstock fleshy, not scaly; stem-leaves usually petioled.
Basal leaves gradually tapering into the petioles.
Plant glabrous or nearly so; leaves dentate; bracts oblong. 7. *S. Holmii.*
Plant arachnoid-floccose; leaves pinnatifid; bracts narrowly lanceolate. 8. *S. taraxacoides.*
Basal leaves abruptly contracted into the petioles. 9. *S. Soldanella.*

III. OCCIDENTALES.

Plant 2–3 dm. high; stem-leaves obovate or oblong, clasping.
Plant very leafy; involucres 10–15 mm. broad, short-peduncled or subsessile; achenes strigose. 10. *S. carthamoides.*
Plant less leafy; involucres about 10 mm. broad, long-peduncled; achenes glabrous. 11. *S. blitoides.*
Plant about 1 dm. high; stem-leaves spatulate or obovate, scarcely clasping.
Leaves obovate-spatulate; plant glabrous; achenes puberulent. 12. *S. Fremontii.*
Leaves oval, spinulose-dentate; leaf-margins scaberulous; surfaces with a few hairs; achenes glabrous. 13. *S. invenustus.*

IV. Triangulares.

Heads few; involucres 10 mm. high; lower leaf-blades cordate, the upper oval. 14. *S. variifolius.*
Heads usually many; involucres 6–8 mm. high: all leaves triangular, or the upper deltoid-lanceolate.
Stem 3–4 dm. high; leaves fleshy. 15. *S. saliens.*
Stem 4–10 dm. high; leaves thin. 16. *S. triangularis.*

V. Serrae.

Heads 12–15 mm. high; disk 8–15 mm. broad; whole plant dark green. 17. *S. admirabilis.*
Heads 8–10 mm. high; disk 5–6 mm. wide; plant light green.
Leaves oval-deltoid to lanceolate; panicles elongate. 18. *S. Solidago.*
Leaves narrowly lanceolate to almost linear; panicles round-topped.
Leaves, at least the lower, closely dentate; involucre cylindro-campanulate. 19. *S. serra.*
Leaves entire; involucres turbinate-campanulate. 20. *S. lanceolatus.*

VI. Eremophili.

Blades of the leaves sinuately lobed, the upper cleft halfway to the midrib.
Bracts linear-subulate, not thickened on the back. 21. *S. glauciifolius.*
Bracts linear, carinate on the back. 22. *S. Kingii.*
Blades of the leaves pinnatifid or laciniate, cut usually to near the midrib.
Leaf-blades ovate in outline; divisions toothed or lobed.
Involucres 6–7 mm. high, 5–6 mm. broad; bracts black-tipped. 23. *S ambrosioides.*
Involucres 7–10 mm. high, 6–8 mm. broad. 24. *S eremophilus.*
Leaf-blades narrowly oblanceolate; divisions linear, entire. 25. *S. Kuntzei.*

VII. Longilobi.

Plant glabrous, at least in age.
Leaves except those of the branches pinnately divided.
Leaves oblanceolate, with lanceolate or oblong lobes or teeth. 25. *S. Kuntzei.*
Leaves and their divisions linear-filiform.
Bractlets one-third to one-half as long as the bracts, filiform. 26. *S. filicifolius.*
Bractlets very short, subulate.
Involucres campanulate; bracts 12–15. 27. *S. Riddellii.*
Involucres almost cylindrical; bracts 8–10. 28. *S. multicapitatus.*
Leaves entire, linear-filiform, or some rarely with a pair of filiform lobes. 29. *S. spartioides.*
Plant more or less permanently tomentose. 30. *S. longilobus.*

VIII. Glaucescentes.

Basal leaves spatulate or oblanceolate.
Bracts long-attenuate, slightly if at all black-tipped; lower leaves broadly spatulate. 31. *S. anacletus.*
Bracts short, acute, with conspicuous black tips.
Lower leaves broadly spatulate. 32. *S. glaucescens.*
Lower leaves oblanceolate. 96. *S. lapathifolius.*
Basal leaves narrowly linear-oblanceolate. 33. *S. lugens.*

IX. Foliosi.

Heads cylindro-campanulate; disk about 5 mm. wide.
Bracts black-tipped.
Bracts broadly linear, abruptly acute. 34. *S. atratus.*
Bracts narrowly linear, long-acute. 35. *S. milliflorus.*
Bracts not black-tipped. 36. *S. foliosus.*
Heads openly campanulate; disk 8–10 mm. wide; upper stem-leaves much reduced. 37. *S. sphaerocephalus.*

X. Cani.

Heads 7–8 mm. high.
Involucres as well as the whole plant densely white-tomentose. 38. *S. Hallii.*
Involucres glabrate or nearly so.
Plant densely tomentose; basal leaves short-petioled; petioles scarcely exceeding the blades.
Blades of the basal leaves obovate or spatulate. 39. *S. Purshianus.*
Blades of the basal leaves linear or nearly so. 40. *S. larimiensis.*
Plant finely tomentose, becoming more glabrate in age; basal leaves with slender petioles, much longer than the blades. 41. *S. Howellii.*
Heads 1 cm. or more high.
Blades of the basal leaves narrowly oblanceolate; stem-leaves linear, entire.
Plant 3–6 dm. high; involucres campanulate; upper leaves much reduced. 42. *S. spatuliformis.*
Plant 1–2 dm. high; involucres turbinate-campanulate; upper leaves not much reduced. 43. *S. Harbourii.*
Blades of the basal leaves spatulate or broadly oblanceolate; stem-leaves lanceolate or oblong, usually more or less pinnatifid; heads hemispheric. 44. *S. canus.*

XI. Tomentosi.

Some of the basal leaves entire or dentate.
- Basal leaves obovate or spatulate.
  - Plant conspicuously rosulate-stoloniferous; stem-leaves sinuately round-lobed. 50. *S. Fendleri.*
  - Plant not stoloniferous; stem-leaves pinnatifid with toothed lobes or dentate.
    - Lower stem-leaves acute; plant dark green. 45. *S. plattensis.*
    - Lower stem-leaves obtuse or rounded at the apex; plant yellowish green.
      - Basal leaves dentate; achenes hispidulous on the angles. 46. *S. neomexicanus.*
      - Basal leaves crenate; achenes glabrous. 47. *S. Leonardi.*
- Basal leaves lanceolate or oblanceolate; achenes glabrous.
  - Basal leaves narrowly oblanceolate, serrate. 48. *S. salicinus.*
  - Basal leaves lanceolate, sinuate-dentate. 49. *S. canovirens.*

All leaves pinnatifid, with toothed segments.
- Heads discoid; leaves crisp. 51. *S. lanatifolius.*
- Heads radiate; leaves scarcely crisp.
  - Caudex subligneous; plant tomentose; bracts shorter than the disk; achenes glabrous. 50. *S. Fendleri.*
  - Caudex not subligneous; plant glabrate in age.
    - Achenes glabrous. 52. *S. uintahensis.*
    - Achenes hispidulous. 53. *S. multilobatus.*

XII. Aurei.

Heads radiate.
- Leaves thick, more or less fleshy.
  - Basal leaves narrowly oblanceolate.
    - Plant low, less than 2 dm. high, often with several stems from the base; basal leaves short-petioled; achenes hispidulous on the angles; ligules yellow.
      - Cyme dense; upper leaves usually pinnatifid with narrow lobes. 54. *S. densus.*
      - Cyme more open; stem-leaves entire or merely crenate.
        - Basal leaves subentire or 3-toothed at the apex. 55. *S. tridenticulatus.*
        - Basal leaves crenate. 56. *S. oblanceolatus.*
    - Plant about 4–6 dm. high, simple; achenes glabrous; ligules orange.
      - Leaves serrate or subentire; basal leaves 1 cm. or more, slender-petioled. 57. *S. longipetiolatus.*
      - Stem-leaves with long, triangular lobes; basal leaves 5 cm. long or less. 58. *S. Rydbergii.*
  - Basal leaves cuneate, spatulate, or broadly oblanceolate, subentire at the base.
    - Lower stem-leaves spatulate, with broad-winged petioles; upper ones sessile and with much enlarged bases. 72. *S. dimorphophyllus.*
    - Stem-leaves neither broad-winged nor with much enlarged bases.
      - Stem-leaves, like the basal ones, broadly obovate, coarsely toothed. 59. *S. oodes.*
      - Stem-leaves reduced, either very narrow or else pinnatifid.
        - Basal leaves angularly dentate or crenate all around, or more or less lyrate.
          - Achenes glabrous.
            - Basal leaves oval, crenate, or subentire. 60. *S. lactiflorus.*
            - Basal leaves obovate, dentate or incised. 61. *S. rubricaulis.*
          - Achenes hispidulous. 62. *S. mutabile.*
        - Basal leaves toothed above the middle.
          - Basal leaves dentate.
            - Lower stem-leaves cuneate; plant 3–4 dm. high. 63. *S. subcuneatus.*
            - Lower stem-leaves oblanceolate; plant about 2 dm. high. 64. *S. acutidens.*
          - Basal leaves crenate. 65. *S. cymbalarioides.*
- Leaves thin.
  - Basal leaves distinctly crenate or dentate.
    - Achenes glabrous.
      - Basal leaf-blades broad, from cordate to obovate or oval, not tapering at the base.
        - Stem stout; heads 8–10 mm. high.
          - Basal leaves usually subcordate at the base; stem-leaves lyrate-pinnatifid, with the lower lobes narrow. 66. *S. pseudaureus.*
          - Basal leaf-blades obovate; stem-leaves pinnatifid, with broad divisions. 67. *S. platylobus.*
        - Stem slender; heads 6–7 mm. high. 68. *S. flavulus.*
      - Basal leaf-blades oblanceolate.
        - Plant subglaucous. 70. *S. Willingii.*
        - Plant not subglaucous. 69. *S. multinomensis.*
    - Achenes hispidulous. 71. *S. Tweedyi.*
  - Basal leaves sinuate or entire.
    - Stem-leaves pinnatifid with dilated-auricled bases.
      - Plant low, 1–2 dm., rarely 3 dm. high; ligules mostly yellow. 72. *S. dimorphophyllus.*
      - Plant tall, 3–7 dm. high; ligules deep orange to brick-red. 73. *S. crocatus.*

Stem-leaves not with dilated-auricled bases.
Stem-leaves entire or nearly so, not auricled. 74. *S. Tracyi.*
Stem-leaves more or less lyrate-pinnatifid.
Basal leaf-blades suborbicular, sinuate. 75. *S. Pammelii.*
Basal leaf-blades oval or ovate.
Plant densely cespitose; bracts 5–6 mm. long. 76. *S. aquariensis.*
Plant not densely cespitose; bracts 7–8 mm. long. 77. *S. Farriae.*
Heads discoid.
First basal leaves reniform. 78. *S. nephrophyllus.*
None of the leaves reniform.
Plant stout; stem-leaves with broad laciniate segments. 79. *S. idahoensis.*
Plant slender; stem-leaves with narrow segments.
Plant yellowish or light green; bracts not purple-tinged. 68. *S. flavulus.*
Plant dark green.
Basal leaves crenate; head 8–10 mm. high; bracts purple-tinged, linear. 80. *S. pauciflorus.*
Basal leaves wavy; heads about 6 mm. high; bracts broadly lanceolate or oblong, not purple-tinged. 81. *S. fedifolius.*

XIII. SUBNUDI.

One species. 82. *S. subnudus.*

XIV. ANDICOLAE.

Blades of the basal leaves orbicular, rounded, subcordate, obovate or cuneate, toothed at least at the apex, obtuse.
Heads 7–8 mm. high, several in a dense cluster. 83. *S. Wardii.*
Heads 9–12 mm. high, solitary or a few in an open corymb.
Rays golden yellow. 84. *S. petrocallis.*
Rays paler yellow.
Basal leaf-blades sub-reniform; plant subacaulescent. 85. *S. Porteri.*
Basal leaf-blades oval or obovate; plant with a short stem.
Involucre hemispherical to campanulate.
Flowering stems about 2 dm. high; heads 9–10 mm. high; basal leaves crenate-serrate, except at the very base; achenes hispidulous on the angles. 86. *S. cognatus.*
Flowering stems less than 1.5 dm. high; heads 10–12 mm. high; achenes glabrous.
Stem-leaves linear or linear-oblanceolate, if toothed, only at the apex. 87. *S. pentodontus.*
Stem-leaves lanceolate, the lower more or less pinnately lobed or toothed. 88. *S. ovinus.*
Involucre turbinate. 89. *S. turbinatus.*
Blades of the basal leaves elliptical to linear, entire or very rarely some of them 3-toothed at the apex, acute.
Plant in age nearly glabrous, monocephalous, 5–6 cm. high. 90. *S. alpicola.*
Plant more or less permanently floccose, with usually several heads, over 1 dm. high. 91. *S. werneriaefolius.*

XV. HYDROPHILI.

Leaves thick, entire or rarely minutely denticulate; inflorescence dense.
Heads discoid; stem-leaves more or less clasping. 92. *S. pacificus.*
Heads radiate; stem-leaves narrowed at the base. 93. *S. hydrophilus.*
Leaves dentate; inflorescence open. 94. *S. hydrophiloides.*

XVI. CRASSULI.

Stem-leaves linear or linear-lanceolate.
Stem naked above; disks 8–10 mm. broad. 95. *S. pereziifolius.*
Stem leafy; disks 12–15 mm. broad. 96. *S. lapathifolius.*
Stem-leaves ovate or ovate-lanceolate.
Leaves firm; bracts very thick and fleshy. 97. *S. crassulus.*
Leaves thin; bracts not very thick. 98. *S. semiamplexicaulis.*

XVII. RAPIFOLII.

One species. 99. *S. rapifolius.*

XVIII. INTEGERRIMI.

Heads several.
Bracts of the involucres narrowly linear-lanceolate, long-attenuate.
Bracts without black tips; leaves entire-margined.
Plant low, 1–3 dm. high, simple, more or less villous. 100. *S. Scribneri.*
Plant tall, 4–10 dm. high, branched, glabrous. 101. *S. integerrimus.*
Bracts usually black-tipped; leaves more or less dentate or denticulate.
Leaves thick, the basal ones obovate, dentate. 102. *S. Hookeri.*
Leaves thin, the basal ones oblanceolate or spatulate, merely denticulate. 103. *S. dispar.*
Bracts of the involucres linear or oblong, rather abruptly acute, with a lanceolate or triangular black tip.
Basal leaf-blades cordate to broadly oval, rather abruptly contracted into the petioles.
Rays ochroleucous or white. 104. *S. Leibergii.*
Rays deep yellow.

Leaves more or less dentate or denticulate; stem 3–10 dm. high. 105. *S. exaltatus.*
Basal leaves entire; stem 2–3 dm. high. 106. *S. Flintii.*
Basal leaf-blades spatulate to linear-oblanceolate or rarely lanceolate, gradually tapering into the petioles.
Bracts about half as long as the fully developed disk.
Plant 6–8 dm. high; inflorescence open, broad, about 2 dm. wide. 107. *S. latus.*
Plant 3–6 dm. high, slender; inflorescence 5–8 cm. broad, with a few heads. 33. *S. lugens.*
Bracts more than half as long as the disk; inflorescence usually congested.
Leaves crisp, as well as the stem, conspicuously arachnoid-hairy, especially when young; inflorescence dense; heads less than 1 cm. high. 108. *S. condensatus.*
Leaves not crisp, only slightly villous when young; inflorescence more open; heads usually over 1 cm. high.
Leaves more or less dentate; inflorescence even in age a flat-topped corymb. 109. *S. columbianus.*
Leaves merely callous-denticulate; inflorescence with a short-peduncled terminal head and the lateral ones usually very long-peduncled. 110. *S. perplexus.*
Heads solitary. 111. *S. solitarius.*

XIX. MEGACEPHALI.

One species. 112. *S. megacephalus*

XX. VULGARES.

One species. 113. *S. vulgaris.*

XXI. PALUSTRES.

One species. 114. *S. palustris.*

130. TETRADŸMIA DC.

Heads 4-flowered; bracts 4, lance-oblong; branches with scurvy-tomentose lines.
Primary leaves linear to oblanceolate, permanently tomentose, more or less spreading.
Primary leaves oblanceolate. 1. *T. inermis.*
Primary leaves linear.
Primary leaves 2–3 cm. long, straight. 2. *T. canescens.*
Primary leaves 1–1.5 cm. long, arcuately recurved, pungent-pointed; secondary leaves fascicled. 3. *T. linearis.*
Primary leaves linear-subulate.
Primary leaves erect, slender; secondary leaves linear, or spatulate-linear, glabrate in age. 4. *T. glabrata.*
Primary leaves spreading, stiff, spine-like; secondary leaves oblanceolate. 5. *T. Nuttallii.*
Heads 5–9-flowered; bracts 5–6, at least the inner broadly oval; branches white-tomentose throughout; plant spiny.
Spines 5–12 mm. long, more or less curved. 6. *T. spinosa.*
Spines 15–30 mm. long, straight. 7. *T. longispina.*

131. ÁRCTIUM L. BURDOCK.

Involucre less than 2 cm. broad; inner bracts not exceeding the flowers. 1. *A. minus.*
Involucre 2.5 cm. broad or more; inner bracts at least equalling the flowers. 2. *A. Lappa.*

132. SAUSSÙREA DC.

Leaves broadly ovate or the lower cordate; plant tall, 4–10 dm. high. 1. *S. americana.*
Leaves lanceolate to linear.
Leaves lanceolate; stem 1–2 dm. high; heads crowded. 2. *S. densa.*
Leaves very narrowly linear-lanceolate; stem 3–4 dm. high; heads long-peduncled. 3. *S. remotiflora.*

133. CÍRSIUM (Tourn.) Hill. THISTLE.

Bracts of the involucre conspicuously arachnoid-pubescent.
Bracts not reflexed, only the tips sometimes spreading; stem arachnoid.
Inner bracts conspicuously dilated. I. PARRYANA.
Inner bracts not dilated.
Leaves not conspicuously decurrent. II. ERIOCEPHALA.
Leaves conspicuously decurrent, forming wings on the stem. III. LANCEOLATA.
Bracts squarrose and the lower reflexed. IV. NEOMEXICANA.
Bracts of the involucre not arachnoid-pubescent, or only slightly so on the margins.
Bracts all, except the outermost, with dilated fimbriate tips. V. CARLINOIDIA.
Bracts all, except sometimes the very innermost, without dilated fimbriate tips.
Bracts neither with a dorsal glutinous ridge, nor a dark spot.
Bracts, at least some of them, spinulose-ciliate on the margins, not very unequal in length. VI. LEIOCEPHALA.
Bracts not spinulose-ciliate, regularly imbricate, the inner much longer.
Innermost innocuous bracts not conspicuously elongate, their tips more or less spreading, usually crisp or twisted, sometimes erose. VII. FOLIOSA.
Innermost innocuous bracts elongate and usually more or less reddish, straight, neither dilated, crisp or twisted. VIII. PULCHELLA.

Bracts with either a glutinous dorsal ridge or a black spot near the tip.
Bracts with a dark spot, but not glutinous; their spines erect.
IX. GRISEA.
Bracts with a glutinous dorsal ridge.
Flowers perfect.
X. UNDULATA.
Flowers dioecious.
XI. ARVENSIA.

I. PARRYANA.

Flowers light, not pinkish; leaves glabrate.
Flowers light greenish yellow; leaves arachnoid, but not tomentose beneath.
1. *C. Parryi.*
Flowers whitish; leaves somewhat tomentose beneath.
2. *C. araneosum.*
Flowers pinkish; leaves densely white-tomentose beneath.
3. *C. scariosum.*

II. ERIOCEPHALA.

Anthers glabrous.
Leaves densely tomentose on both sides.
4. *C. subniveum.*
Leaves not densely tomentose on both sides.
Flowers ochroleucous or white.
Leaves with very short or no lobes and numerous almost parallel spines along the margins, not crisp.
5. *C. Kelseyi.*
Leaves with deep divisions, often again lobed, crisp, and with the spines pointing in various directions.
Leaves white-tomentose beneath.
Involucre densely arachnoid; bracts all narrowly linear-lanceolate.
Heads not nodding, scattered on short branches in the axils of the leaves.
6. *C. Hookerianum.*
Heads in a terminal dense cluster, at first nodding.
7. *C. scopulorum.*
Involucres only slightly arachnoid; outer bracts lanceolate.
25. *C. oreophilum.*
Leaves glabrous on both sides; heads clustered in an elongate leafy spike.
8. *C. polyphyllum.*
Flowers purple or pink.
Involucre densely arachnoid; bracts rarely spinulose-ciliate.
Heads 3.5–4 cm. high, 4–6 cm. broad, not densely clustered; corolla red-purple.
9. *C. edule.*
Heads 2.5–3 cm. high and about as broad.
Heads sessile at the end of the stem; bracts linear-subulate; corolla purple.
10. *C. Macounii.*
Heads scattered; bracts lance-subulate; corolla pink.
11. *C. Tweedyi.*
Involucres only slightly arachnoid if at all; bracts except the innermost spinulose-ciliate.
11. *C. Eatonii.*
Anthers pubescent.
12. *C. hesperium.*

III. LANCEOLATA.

One species.
13. *C. lanceolatum.*

IV. NEOMEXICANA.

Leaves densely white-tomentose; heads 3.5–6 cm. high, 4–8 cm. broad; bracts strongly squarrose, the outer reflexed.
14. *C. neomexicanum.*
Leaves loosely floccose; heads 3–3.5 (rarely 4) cm. high, 3.5–5 cm. broad; bracts spreading only in age.
15. *C. nevadense.*

V. CARLINOIDIA.

Flowers ochroleucous or white; bracts without glutinous ridge.
Leaves pinnately divided.
16. *C. Centaureae.*
Leaves merely sinuately lobed, the upper with broad clasping bases.
17. *C. laterifolium.*
Flowers red.
Bracts without glandular ridge; leaves deeply lobed, with lanceolate divisions.
18. *C. vernale.*
Bracts with glandular ridge; leaves slightly lobed, with broadly triangular lobes.
19. *C. perplexans.*

VI. LEIOCEPHALA.

Leaves green on both sides, glabrous or arachnoid beneath.
Leaves crisp and very spiny; involucral bracts very spiny, the outer ones as long as the inner; corollas rose or pink.
20. *C. Eatoni.*
Leaves almost flat, with weak spines; involucral bracts well imbricate, the outer ones short and with short spines.
21. *C. clavatum.*
Leaves tomentose beneath; involucral bracts with strong flat spines.
39. *C. griseum.*

VII. FOLIOSA.

Plant acaulescent or nearly so; heads clustered.
22. *C. acaulescens.*
Plant distinctly caulescent.
Inner bracts with scarcely dilated, not erose linear-lanceolate tips.
Heads 3.5–5 cm. high.
Leaves deeply pinnatifid, with strong spines.
23. *C. coloradense.*
Leaves nearly entire, spinulose-ciliate.
24. *C. Butleri.*
Heads 2–3.5 cm. high.

Leaves green, distinctly decurrent.
Lobes of the leaves lanceolate or triangular. 33. *C. calcareum.*
Lobes of the leaves semi-orbicular. 34. *C. lactucinum.*
Leaves more or less tomentose beneath, scarcely decurrent.
Bracts broad and short, with flat spines. 35. *C. spathulatum.*
Bracts narrow, with weak or slender spines.
Bracts greenish, sometimes slightly arachnoid on the margins, but not floccose; lobes of the leaves obtuse. 25. *C. oreophilum.*
Bracts slightly floccose when young; lobes of the leaves acute.
Involucral spines more or less spreading; bracts yellowish; leaves slightly lobed. 15. *C. nevadense.*
Involucral spines ascending; bracts greenish; leaves deeply lobed. 26. *C. olivescens.*
Inner bracts with conspicuous dilated, ovate or lanceolate, erose and twisted tips.
Leaves not at all tomentose; heads usually solitary; corollas rose-purple. 27. *C. Drummondii.*
Leaves more or less tomentose beneath; heads usually clustered; corollas white or pale rose.
Heads on short branches solitary in the axils of the leaves. 28. *C. magnificum.*
Heads subsessile and clustered at the end of the stem.
Plant more or less arachnoid as well as tomentose; leaves linear in outline. 29. *C. foliosum.*
Plant not arachnoid, dark green; leaves broader. 30. *C. lacerum.*

VIII. PULCHELLA.

Leaves glabrous or at least glabrate in age.
Spines of the middle bracts fully 1 cm. long and longer than the bracts. 31. *C. diffusum.*
Spines of the middle bracts 3–7 mm. long, shorter than the bracts.
Divisions of the leaves linear to triangular; involucre campanulate.
Divisions of the leaves linear or linear-lanceolate, often again pinnatifid; leaves scarcely decurrent. 32. *C. bipinnatum.*
Divisions of the leaves ovate or triangular; leaves conspicuously decurrent. 33. *C. calcareum.*
Divisions of the leaves semi-orbicular, rounded-ovate; involucre hemispheric. 34. *C. lactucinum.*
Leaves permanently tomentose, at least beneath.
Tips of the inner bracts chartaceous, yellow, spreading, and slightly erose. 35. *C. spathulatum.*
Tips of the inner bracts soft, erect and usually purplish.
Spines of the middle bracts more than 1 cm. long, stout. 36. *C. nidulum.*
Spines of the middle bracts 3–6 mm. long, slender.
Divisions of the leaves narrow; corolla rose-purple; involucre narrow. 37. *C. pulchellum.*
Divisions of the leaves broad and short, ovate; corollas crimson; involucre broad. 38. *C. arizonicum.*

IX. GRISEA.

Leaves green above, tomentose beneath; bracts not viscid.
Bracts, with short spines, the outer not spinulose-ciliate. 35. *C. spathulatum.*
Bracts, with long spines.
Spines of the bracts stout; heads 2.5–3 cm. broad. 39. *C. griseum.*
Spines of the bracts slender; heads about 1.5 cm. broad. 40. *C. modestum.*
Leaves loosely floccose on both sides; bracts decidedly viscid. 41. *C. canovirens.*

X. UNDULATA.

Leaves white-tomentose beneath.
Flowers ochroleucous.
Involucral bracts very viscid, with broad glutinous dorsal ridge; divisions of the leaves rather few; spines of the bracts short.
Tips of the inner bracts more or less dilate and crisp; involucre of the terminal head 4–5 cm. in diameter. 42. *C. plattense.*
Tips of the inner bracts linear-lanceolate, neither dilated nor crisp; heads usually less than 4 cm. in diameter.
Bracts very numerous and small, with small spreading spines.
Stem-leaves deeply pinnately lobed, with rather stout spines.
Lobes, at least of the lower leaves, oblong to rounded-ovate, obtuse. 43. *C. Nelsonii.*
Lobes of the leaves lanceolate or linear-lanceolate, acute.
Heads more than 3 cm. broad; bracts linear-lanceolate. 44. *C. palousense.*
Heads less than 3 cm. broad; middle bracts ovate-lanceolate or ovate. 45. *C. Tracyi.*
Stem-leaves sinuate-dentate or sinuately lobed, merely spinulose; heads 2.5–3 cm. broad. 46. *C. nebraskense.*
Bracts comparatively few and broad, with erect spines; leaves sinuate-dentate or slightly lobed. 47. *C. brevifolium.*
Involucral bracts greenish or yellowish, scarcely viscid, with inconspicuous dorsal ridge; divisions of the leaves numerous; spines of the bracts long and slender. 48. *C. acuatum.*
Flowers rose or purple, rarely white; dorsal viscid ridge not so prominent.

Involucres less than 4 cm. broad.
Spines of the middle bracts 5–10 mm. long.
Spines of the middle bracts slender and spreading. 48. *C. acaulum.*
Spines of the middle bracts stout and ascending.
Upper leaves entire or with shallow lobes; involucre less than 2 cm. broad, very dark. 49. *C. canescens.*
Upper leaves deeply pinnatifid; involucres about 3 cm. broad, light colored, except the viscid ridge. 50. *C. pulcherrimum.*
Spines of the middle bracts 5 mm. long or less, weak and spreading.
Leaves, at least the upper ones, entire or slightly lobed, tomentose on both sides. 51. *C. oblanceolatum.*
Leaves pinnately divided or deeply lobed.
Leaves deeply pinnatifid, with narrow, linear-lanceolate lobes; plant yellowish. 52. *C. Flodmanii.*
Leaves with triangular or ovate-lanceolate lobes.
Bracts with very inconspicuous glandular ridge, not at all viscid. 53. *C. floccosum.*
Bracts with a conspicuous glandular ridge, surrounded by a viiscd area.
Leaves tomentose on both sides. 54. *C. undulatum.*
Leaves glabrate and dark green above. 55. *C. Engelmannii.*
Involucres 4–7 cm. in diameter.
Spines of the involucral bracts rarely more than 5 mm. long; leaves not conspicuously decurrent. 56. *C. megacephalum.*
Spines of the middle bracts fully 1 cm. long; leaves narrower, conspicuously decurrent. 57. *C. ochocentrum.*
Leaves greenish and sparingly floccose on both sides; bracts linear-lanceolate, very viscid, with stout erect or ascending spines. 41. *C. canovirens.*

XI. ARVENSIA.

One species. 58. *C. arvense.*

134. ONOPÓRDON (Vaill.) L. COTTON THISTLE, SCOTCH THISTLE.

1. *O. Acantium.*

135. CENTAURÈA L. BLUE BOTTLE, CORNFLOWER, BACHELOR'S BUTTONS, STAR THISTLE.

Involucral bracts with lacerate broad appendages; flowers blue. 1. *C. Cyanus.*
Involucral bracts with 3–5 spines; flowers yellow. 2. *C. solstitialis.*

FAMILY 137. **CICHORIACEAE.** CHICORY FAMILY.

A. Pappus none; achenes with corky pericarp. 1. ATRICHOSERIS.
B. Pappus present.
I. Pappus of plumose bristles, often more or less paleaceous at the base.
Achenes truncate at the apex, not beaked.
Flowers yellow; simple plants with fusiform roots. 2. PTILOCALAIS.
Flowers pink, rose, or white; branched plants with rush-like stems. 3. PTILORIA.
Achenes with long beaks.
Receptacle not chaffy.
Involucres of 7–15 linear-acuminate equal bracts and smaller calyculate ones at the base; achenes obscurely ribbed; branched annuals with pinnatifid leaves. 4. NEMOSERIS.
Involucres of several lanceolate-attenuate herbaceous bracts; no calyculate ones at the base; achenes 5–10-ribbed; leaves grass-like and heads solitary. 5. TRAGOPOGON.
Receptacle chaffy. 6. HYPOCHERIS.
II. Pappus not plumose.
a. Pappus consisting, at least partly, of squamellae or these reduced and united into a crown.
1. Involucres simple and naked, *i. e.*, without smaller calyculate ones below; pappus of both squamellae and bristles; flowers yellow. 7. ADOPOGON.
2. Involucres double, either imbricate or with smaller calyculate ones below.
Flowers blue; pappus crown-like of small numerous blunt squamellae in 2 or more series; tall perennials. 8. CICHORIUM.
Flowers yellow; pappus of large squamellae; low annuals, acaulescent or nearly so.
Squamellae of the pappus 5, cleft at the apex with an awn in the notch; involucres calyculate. 9. UROPAPPUS.
Squamellae of the pappus 20–30, very narrow, linear-lanceolate, tapering into a bristle-like apex; bracts nearly equal, in two series. 10. NOTHOCALAIS.
b. Pappus of capillary bristles, not plumose, slightly if at all broadened below.
1. Achenes not flattened.
a. Pappus-bristles promptly deciduous, mainly together, only a few of the stouter ones in some species remaining.
Achenes more or less narrowed into a beak.
Achenes without a cup-shaped shoulder, not cancellate.

Achenes 5-ribbed; main bracts scarious-margined; receptacle bristly. 11. CALYCOSERIS.
Achenes 10-striate; bracts not scarious; receptacle not bristly. 12. YOUNGIA.
Achenes 5-ribbed, conspicuously cancellate-sculptured, with a cupulate shoulder, from which the slender, 5-ribbed hollow beak arises. 13. GLYPTOPLURA.
Achenes not beaked, columnar, 5–15-ribbed, truncate at the apex.
Involucres of broad silvery-scarious bracts, regularly imbricate; bristles of the receptacle persistent. 14. MALACOLEPIS.
Involucres of narrow acuminate or acute bracts, only slightly scarious-margined; bristles of the receptacle, if any, few and deciduous. 15. MALACOTHRIX.

b. Pappus persistent, tardily falling off, separately, or together only by the breaking off of the beak.
Beak of the achenes none or a mere attenuation.
Flowers rose or purplish.
Plants spiny and rush-like; leaves scale-like; achenes truncate at the summit. 16. PLEIACANTHUS.
Plants not spiny.
Stems rush-like and striate; leaves narrowly linear-lanceolate or reduced; achenes tapering at the summit. 17. LYGODESMIA.
Stems not rush-like; leaves ample; achenes tapering to the base.
Annuals; heads 4–5-flowered; achenes with 4–5 strong ribs. 18. PRENANTHELLA.
Perennials; heads 8–30-flowered (rarely less); achenes terete or 4–5-angled. 19. NABALUS.
Flowers yellow or white.
Heads several, rarely solitary; stem leafy.
Achenes tapering upwards; pappus white.
Achenes not dilated into a pappiferous disk.
Bracts in fruit more or less thickened at the base or on the midrib. 20. CREPIS.
Bracts not thickened on the backs. 21. HETEROPLEURA
Achenes contracted into a more or less distinct beak, enlarged at the apex into a pappiferous disk. 12. YOUNGIA.
Achenes not tapering upwards; pappus in ours sordid or reddish; bracts not thickened.
Leaves simple and entire-margined or denticulate; inflorescence in ours more or less corymbiform; bracts narrow, green. 22. HIERACIUM.
Leaves divided or lobed; inflorescence thyrsoid-paniculate; bracts broad and colored. 19. NABALUS.
Heads solitary on a leafless scape. 10. NOTHOCALAIS.
Beaks of the achenes distinct and slender; plants scapiferous.
Achenes 10-ribbed or 10-nerved, not spinose-muricate; involucres more or less imbricate. 23. AGOSERIS.
Achenes 4–5-ribbed, muricate-spinulose at least near the apex; involucres of a single series of principal bracts and several or numerous calyculate ones below. 24. LEONTODON.

2. Achenes flattened; leafy-stemmed plants with paniculate heads.
Achenes narrowed at the top or beaked; pappus-bristles falling separately; involucres cylindraceous. 25. LACTUCA.
Achene truncate at the top; pappus-bristles falling off more or less in connection; involucres hemispherical or campanulate. 26. SONCHUS.

1. ATRICHÓSERIS A. Gray. 1. *A. platyphylla.*

2. PTILOCÀLAIS Greene.

Pappus-squamellae oblanceolate or oblong, truncate or abruptly contracted into the awn.
Leaves entire or with short lobes.
Leaf-blades proper lanceolate or elliptic; heads about 2.5 cm. high. 1. *P. major.*
Leaf-blades proper linear or linear-lanceolate; heads less than 2 cm. high. 2. *P. nutans.*
Leaves with long filiform lobes. 3. *P. graciloba.*
Pappus-squamellae linear-lanceolate, gradually tapering into the awn.
Leaves linear-lanceolate or lanceolate; squamellae 4–5 mm. long. 4. *P. macrolepis.*
Leaves narrowly linear; squamellae 2 mm. long or less. 5. *P. tenuifolia.*

3. PTILÒRIA Raf. DESERT PINK, FLOWERING STRAW.

Perennials.
Heads 10–20-flowered; involucres over 1 cm. high; leaves broad, runcinate, with short lobes. 1. *P. Parryi.*
Heads 3–9- (mostly 5-) flowered.
Pappus plumose to the base; involucres 7–10 mm. high.
Leaves very narrow, almost filiform and usually entire. 2. *P. tenuifolia.*

Leaves, at least the lower ones, broad, oblanceolate in outline, and runcinate. 3. *P. ramosa.*
Pappus merely scabrous or hirsutulous at the base.
Leaves runcinate, but narrow; involucres 9–10 mm. high. 4. *P. pauciflora.*
Leaves linear-filiform; involucres 5–6 mm. high. 5. *P. myrioclada.*
Annuals or biennials.
Pappus-bristles not dilated at the base; heads usually subsessile on spike-like branches. 6. *P. virgata.*
Pappus-bristles somewhat dilated at the base, often more or less united; heads paniculate.
Pappus plumose to the base or nearly so; plant tall and slender. 7. *P. paniculata*
Pappus plumose only above the middle; plant usually low and stout. 8. *P. exigua.*

4. NEMÓSERIS Greene. Desert Chicory.

Ligules 10–15 mm. long; beak of the achenes much shorter than the body. 1. *N. neomexicana.*
Ligules about 5 mm. long; beak of the achenes as long as the body. 2. *N. californica.*

5. TRAGOPÒGON (Tourn.) L. Salsify, Oyster Plant.

Flowers yellow.
Bracts 8–9; flowers chrome yellow; involucral bracts equalling or shorter than the flowers. 1. *T. pratensis.*
Bracts 10–13, rarely less; flowers lemon yellow; involucres longer than the flowers. 2. *T. dubius.*
Flowers purple; involucral bracts much longer than the flowers. 3. *T. porrifolius.*

6. HYPOCHAÈRIS L. Cat's-ear, Gosmore. 1. *H. radiata,*

7. ADOPÒGON Neck. 1. *A. virginicus.*

8. CICHÒRIUM (Tourn.) L. Chicory. 1. *C. Invybus.*

9. UROPÁPPUS Nutt.

Awns 1–2 times as long as the short pappus-squamellae. 1. *U. macrochaetus.*
Awns scarcely half as long as the long pappus-squamellae. 2. *U. linearifolius.*

10. NOTHOCÀLAIS (A. Gray) Greene.

Bracts linear-lanceolate, scarcely spotted.
Pappus distinctly paleaceous, of narrow squamellae gradually attenuate. 1. *N. troximoides.*
Pappus of bristles only slightly broader and flattened at the base. 2. *N. cuspidata.*
Bracts ovate or ovate-lanceolate, acuminate, conspicuously spotted. 3. *N. nigrescens.*

11. CALYCÓSERIS A. Gray.

Flowers rose-colored; achenes with the short beak about 5 mm. long. 1. *C. Wrightii.*
Flowers yellow; achenes with the long beak about 10 mm. long. 2. *C. Parryi.*

12. YOÚNGIA Cass.

Achenes conspicuously beaked; stem 1–2 dm. high. 1. *Y. elegans.*
Achenes scarcely beaked, merely constricted below the disk; stem 5 cm. or less high. 2. *Y. nana.*

13. GLYPTOPLEÙRA D. C. Eat.

Corollas white, turning pink; leaves with broad white scarious margins and short broad teeth. 1. *G. marginata.*
Corollas yellow, turning pink; leaves with very narrow white scarious margins and subulate, setiform teeth. 2. *G. setulosa.*

14. MALACOLÈPIS (A. Gray) Heller. Snake's Head. 1. *M. Coulteri.*

15. MALACÓTHRIX DC. Desert Dandelion.

Divisions of the leaves filiform; plant scapose or nearly so. 1. *M. glabrata.*
Divisions or lobes of the leaves not filiform; stem more or less leafy.
Leaves sinuately runcinate; lobes entire or nearly so; achenes not winged. 2. *M. runcinata.*
Leaves deeply pinnatifid; divisions toothed or lobed.
Achenes wing-margined on 5 of the ribs; outer persistent bristles of the pappus present. 3. *M. Torreyi.*
Achenes not winged; outer persistent bristles of the pappus none. 4. *M. sonchioides.*

16. PLEIACÁNTHUS (Nutt.) Rydb. 1. *P. spinosus.*

17. LYGODÉSMIA D. Don. Wild Asparagus, Skeleton Weed, Prairie Pink.

Perennials, with deep-seated rootstocks.
Involucres 15–25 mm. high, 6–10-flowered. 1. *L. grandiflora.*

Involucres 10 mm. high, usually 5-flowered; upper leaves reduced. 2. *L. juncea*
Annuals; involucres 10–15 mm. high. 3. *L. rostrata*

18. PRENANTHÉLLA Rydb. 1. *P. exigua.*

19. NÁBALUS Cass. RATTLESNAKE-ROOT.

Basal leaves oblanceolate or spatulate; inflorescence hirsute. 1. *N. racemosus.*
Basal leaves cordate, sagittate, or hastate; inflorescence glabrous or puberulent.
Leaves variously lobed or cleft; heads nodding; calyculate bracts ovate, very short. 2. *N. albus.*
Leaves dentate; flowering heads not nodding; calyculate bracts linear, half as long as the bracts proper. 3. *N. sagittatus.*

20. CRÈPIS L.

Plant neither canescent nor furfurascent; heads hemispherical to turbinate.
Involucres glabrous or tomentulose when young; neither hirsute nor glandular.
Involucres and peduncles tomentulose, at least when young. 1. *C. tomentulosa.*
Involucres glabrous or slightly puberulent when young. 2. *C. glauca.*
Involucres and peduncles hirsute or glandular or both.
Plant 3–10 dm. high; heads few or many.
Leaf-blades oblanceolate or oblong to linear-oblanceolate.
Leaves long-petioled; petioles half as long to fully as long as the blades, not winged.
Blades of the basal leaves broadly oblanceolate; stem usually with 1–2 leaves; involucres over 1 cm. high. 3. *C. petiolata.*
Blades of the basal leaves narrowly linear-lanceolate or linear-oblanceolate; stem scapiform; involucres less than 1 cm. high. 4. *C. glaucella.*
Leaves subsessile or with short winged petioles.
Leaves glabrous or nearly so; involucres with a few short hairs. 5. *C. perplexans.*
Leaves hairy.
Involucres more sparingly and usually short-hirsute; peduncles and stem usually glabrous; involucres less than 1 cm. high. 6. *C. runcinata.*
Involucres, peduncles, and usually also the stem, copiously glandular-hirsute; involucre over 1 cm. high. 7. *C. platyphylla.*
Leaf-blades obovate to elliptic; involucres and peduncles densely glandular-hispid with long hairs.
Involucres over 1 cm. high; leaves hairy, 1.5–2 dm. long. 8. *C. riparia.*
Involucres 1 cm. or less high; leaves glabrous or nearly so. 9. *C. denticulata.*
Plant 1–2 dm. high; heads solitary, rarely 2 or 3. 10. *C. alpicola.*
Plant more or less canescent or furfurascent, especially the leaves; heads mostly narrow, often almost cylindric.
Involucres glabrous, 5–7-flowered.
Leaves lanceolate in outline, pinnately lobed, with lanceolate to linear lobes. 11. *C. acuminata.*
Leaves more or less twice dissected, with linear-filiform divisions. 12. *C. sesilifolia.*
Involucres canescent.
Involucres cylindric; principal bracts of the involucres 5–8 (rarely 9–11); flowers of the same number; bracts not black-hairy, except sometimes in *C. gracilis.*
Leaves not divided to near the midrib; blade proper wider than the lobes.
Blade proper broadly lanceolate; lobes usually directed downward. 13. *C. intermedia.*
Blade proper narrowly lanceolate to almost linear; lobes curved upwards or spreading. 14. *C. angustata.*
Leaves dissected to near the midrib into linear-filiform divisions, the blade proper or rachis scarcely broader than the divisions. 15. *C. gracilis.*
Involucres campanulate; principal bracts of the involucres 9–18; flowers 10–20; plant low.
Involucres and peduncles without black hairs; achenes nearly columnar. 16. *C. pumila.*
Involucres and peduncles with some black hairs intermixed with the tomentum; achenes more or less fusiform.
Hairs glandular. 17. *C. occidentalis.*
Hairs not glandular.
Achenes ribbed, at maturity brown or almost black.
Stem low, 1–2 dm. high, as well as the petioles usually hispid with yellow hairs; leaves not long-acuminate. 18. *C. subacaulis.*
Stem tall, 4–5 dm. high, not hispid; leaves long-acuminate. 19. *C. atribarba.*
Achenes not ribbed at maturity, greenish or reddish. 20. *C. scopulorum.*

21. HETEROPLEÙRA Schultz-Bip. 1. *H. Fendleri.*

22. HIERÀCIUM (Tourn.) L. HAWKWEED.

Involucres of the rather large heads irregularly more or less imbricate.
Stem yellowish or whitish hirsute below. 1. *H. columbianum.*

Stem glabrous or puberulent. 2. *H. scabriusculum.*
Involucres of the rather small heads of an almost single series of principal bracts and small calyculate ones below.
Flowers yellow.
Plant 4–10 dm. high, leafy.
Involucres and peduncles densely hairy with long yellow hairs. 3. *H. albertinum.*
Involucres blackish and glandular, without or with a few scattered yellow hairs.
Involucres 8–10 mm. high, with scattered yellow hairs. 4. *H. griseum.*
Involucres 6–8 mm. high, without yellow hairs on the involucre or peduncles. 5. *H. cynoglossoides.*
Plant low, 1–3 dm. high, with 1–3 stem-leaves and few heads. 6. *H. gracile.*
Flowers white or ochroleucous. 7. *H. albiflorum.*

23. AGÓSERIS Raf. Goat Chicory.

Perennials.
Beak short, scarcely more than half as long as the body of the achene, striate throughout. I. Glaucae.
Beak long, about as long as or longer than the body of the achene, scarcely striate at the middle.
Body of the achenes tapering at the apex. II. Aurantiacae.
Body of the achenes truncate at the apex. III. Retrorsae.
Annuals. IV. Heterophyllae.

I. Glaucae.

Leaves decidedly pubescent, even in age.
Outer bracts linear-lanceolate to oblong, obtuse or acute.
Outer bracts linear-lanceolate.
Plant tall and stout, 3–5 dm. high; involucres broadly campanulate, about 2.5 cm. high and 2.5–3 cm. wide. 1. *A. taraxacifolia.*
Plant low, 1–2 dm. high; involucres less than 2 cm. high and 1–2 cm. wide.
Leaves linear-oblanceolate, 6–10 cm. long; peduncle slender, about 2 dm. high. 2. *A. pubescens.*
Leaves oblanceolate, 4–6 cm. long, often lobed or toothed; peduncles 1 dm. high or less. 3. *A. aspera.*
Outer bracts oblong or oblong-ovate.
Scape low and stout, about 2 dm. high; leaves oblanceolate, about 1 dm. long. 4. *A. villosa.*
Scape tall, about 6 dm. high; leaves 2–3 dm. long; flowers turning purple. 5. *A. altissima.*
Outer bracts ovate or ovate-lanceolate, acuminate. 6. *A. maculata.*
Leaves in age glabrate and glaucous.
Bracts villous-ciliate, at least on the margins.
Involucre turbinate; leaves narrowly linear; flowers light yellow, turning pink. 7. *A. turbinata.*
Involucres campanulate to hemispherical; leaves oblanceolate or lanceolate.
Inner bracts long-acuminate; plant less than 2 dm. high. 8. *A. attenuata.*
Inner bracts merely acute.
Leaves obtuse or acute, entire or rarely toothed.
Outer bracts much broader than the inner, often obtusish; plant generally low and leaves short, obtuse. 9. *A. pumila.*
Outer bracts usually not much broader than the inner; plant 3–5 dm. high; leaves long and acute. 10. *A. scorzoneraefolia.*
Leaves acuminate, more or less pinnatifid. 11. *A. agrestis*
Bracts glabrous; involucres if at all hairy, tomentose only at the very base.
Outer bracts oval or ovate, obtusish; leaves 2–3 dm. long, oblanceolate; flowers rose-colored. 12. *A. roseata.*
Bracts all linear-lanceolate, acute or acuminate; flowers yellow.
Leaves entire or toothed; flowers yellow, turning pink.
Leaves linear-oblanceolate. 13. *A. glauca.*
Leaves narrowly linear. 14. *A. parviflora.*
Leaves pinnatifid, with narrow lobes; flowers yellow, turning purple.
Bracts, with loose spreading tips; heads broadly campanulate. 15. *A. rosea.*
Bracts appressed; heads more or less turbinate. 16. *A. laciniata.*

II. Aurantiacae.

Bracts all broad, ovate to elliptical, abruptly acuminate. 17. *A. montana.*
Bracts, at least the inner ones, linear or linear-lanceolate, acute.
Involucres more or less regularly imbricate; beak about equalling the body of the achenes.
Leaves densely pubescent.
Plant low; flowers purple. 18. *A. arachnoidea.*
Plant tall; flowers yellow. 19. *A. elata.*
Leaves glabrous or nearly so, somewhat hairy in No. 27.
Flowers reddish brown or deep orange, changing into purplish.
Bracts with purplish blotches; leaves glaucous. 20. *A. purpurea.*
Bracts not with purplish blotches, if at all purplish only along the midrib.
Leaves narrowly linear, glaucous, usually pinnatifid with linear lobes. 21. *A. graminifolia.*

Leaves oblanceolate, usually entire, rarely with short broad lobes or teeth.
All bracts linear-lanceolate and acute.
Plant tall, slender, 3–5 dm. high; leaves erect; heads 2–3 cm. high. 22. *A. gracilens.*
Plant low, 1–3 dm. high; leaves spreading; heads 1.5–2 cm. high. 23. *A. nana.*
Outer bracts oblong or lanceolate, often obtuse.
Plant low, 1 dm. high or less; inner bracts only slightly longer. 24. *A. carnea.*
Plant taller, 3–5 dm. high; inner bracts much longer. 25. *A. aurantiaca.*
Flowers light yellow, but often turning pinkish; inner bracts elongate in age.
Involucres 2–2.5 cm. in diameter; plant tall and stout, scarcely glaucous. 19. *A. elata.*
Involucres less than 1 cm. in diameter; plant slender, glaucous.
Scapes tall, 2.5–4 dm. high, much exceeding the leaves. 26. *A. arizonica.*
Scapes low, about 1 dm. high, slightly if at all exceeding the leaves. 27. *A. leptocarpa*
Involucres of two distinct sets of bracts, the inner narrowly linear, 2–3 times as long as the ovate or oval outer ones; beak 2–3 times as long as the body of the achenes.
Leaves glabrous and glaucous, linear or oblanceolate, acuminate, with linear lobes, or entire.
Outer bracts oblong-obtuse; lobes of the leaves linear to lanceolate, acute. 28. *A. rostrata.*
Outer bracts acute or acuminate; lobes of the leaves narrowly linear. 29. *A. tenuifolia.*
Leaves more or less pubescent, oblanceolate in outline.
Leaves obtuse and with oblong-obtuse lobes. 30. *A. obtusifolia.*
Leaves attenuate and with lanceolate, acute lobes. 31. *A. grandiflora.*

III. Retrorsae.

One species. 32. *A. retrorsa.*

IV. Heterophyllae.

One species. 33. *A. heterophylla.*

24. LEÓNTODON L. Dandelion.

Outer bracts (calyculum) more or less squarrose.
Outer bracts reflexed from the base; leaves deeply runcinate, with triangular to lanceolate lobes.
Achenes bright red. 1. *L. erythrospermum.*
Achenes greenish or brownish.
Bracts numerous; leaves broad and the terminal lobe large. 2. *L. Taraxacum.*
Bracts few; leaves narrow and the terminal lobe small. 3. *L. mexicanum.*
Outer bracts or most of them appressed at the base and with spreading or reflexed tips; leaves with short lobes or sinuate.
Bracts conspicuously corniculate, the outer about two-thirds as long as the inner; scape usually much exceeding the erect leaves; achenes spinulose-toothed above and tuberculate on some of the ribs to near the base. 4. *L. dumetorum.*
Bracts, at least the outer ones, not corniculate, the outer about half as long as the inner; achenes merely tuberculate above, smooth below. 5. *L. leiospermum.*
Outer bracts wholly appressed, short, the mere tip rarely spreading.
Plant not dwarf; scape 5–20 cm. high; involucres 15 mm. or more high.
Plant with a tuft of brown hairs at the base. 6. *L. eriophorum.*
Plant not with brown hairs at the base.
Achenes brownish or greenish.
Calyculate bracts in 2–3 series; achenes muricate to near the base. 7. *L. monticola.*
Calyculate bracts in 1–2 series; achenes smooth below the middle. 8. *L. angustifolium.*
Achenes bright red. 9. *L. ammophilum.*
Plant dwarf; scape 2–10 cm. high; involucres 6–12 mm. high, dark green.
Involucres campanulate, 10–12 mm. high; lobes of the leaves oblong or lanceolate, acutish. 10. *L. rupestre.*
Involucres cylindro-campanulate, 6–8 mm. high, 5 mm. broad; lobes of the leaves broadly triangular, obtuse. 11. *L. scopulorum.*

5. LACTÙCA (Tourn.) L. Lettuce.

Achenes with a slender beak; pappus white.
Outer bracts (calyculum) not more than half as long as the bracts proper; flowers yellow, rarely tinged with blue.
Heads 6–15-flowered; achenes several-nerved, not rugose; leaves spinulose on the ribs.
Leaves sinuate-dentate; achenes dark. 1. *L. virosa.*
Leaves sinuately pinnatifid; achenes light colored. 2. *L. Scariola.*
Heads 12–20-flowered; achenes 1–3-nerved, transversely rugose.
Involucres about 1 cm. high.

Leaves linear-lanceolate, perfectly entire. 3. *L. polyphylla.*
Leaves pinnatifid or lobed, at least some of them. 4. *L. canadensis.*
Involucres 1.2–2 cm. high.
Leaves obovate or oblanceolate in outline, with broad lobes, often spinulose on the midribs beneath. 5. *L. ludoviciana.*
Leaves linear or linear-lanceolate in outline, entire or with narrow lobes, never spinulose. 6. *L. graminifolia.*
Bracts in 5–6 series, gradually increasing upwards, a distinct calyculum therefore not evident; flowers blue. 7. *L. pulchella.*
Achenes beakless; pappus tawny or brown.
Lobes of the leaves broadly triangular or ovate, sinuately and saliently dentate. 8. *L. spicata.*
Lobes of the leaves lanceolate or linear, again 1–3-lobed. 9. *L. multifida.*

26. SÓNCHUS (Tourn.) L. Sow-thistle.

Perennial; achenes slightly compressed; involucres usually glandular-pubescent; heads about 2 cm. high. 1. *S. arvensis.*
Annual; achenes strongly compressed; involucres usually glabrous; heads about 15 mm. high.
Auricles of the leaves acute; achenes transversely wrinkled. 2. *S. oleraceus.*
Auricles of the leaves rounded; achenes not transversely wrinkled. 3. *S. asper.*

PTERIDOPHYTA

KEY TO THE FAMILIES.

PAGE

Leaves usually broad, entire or dissected, not scale-like; fern-like plants.
- Spores of one kind, minute, borne in sporanges.
  - Vernation not spirally coiled; sporangia ringless, leathery, opening by a transverse slit, arranged in spikes or panicles. 1. OPHIOGLOSSACEAE. 280
  - Vernation spirally coiled; sporangia membranous, provided with a ring, which opens elastically. 2. POLYPODIACEAE. 280
- Spores of two kinds, minute microspores (male) and larger macrospores (female), borne in sporocarps.
  - Plant rooting in the mud; leaves 4-foliolate, petioled. 3. MARSILIACEAE. 283
  - Plant minute, floating; leaves entire or 2-lobed. 4. SALVINIACEAE. 283

Leaves scale-like or awl-like; moss-like or rush-like plants.
- Sporanges in an apical cone, borne under peltate bracts; stem usually hollow, rush-like. 5. EQUISETACEAE. 283
- Sporanges in the axils of small leaf-like bracts; stem solid.
  - Leaves awl-like, elongate, borne on a short thick corm-like caudex; water plants. 6. ISOETACEAE. 283
  - Leaves scale-like, flat, borne on a distinct stem; land plants.
    - Spores uniform, minute. 7. LYCOPODIACEAE. 283
    - Spores of two kinds, microspores and macrospores. 8. SELAGINELLACEAE. 284

FAMILY 1. **OPHIOGLOSSACEAE.** ADDER'S TONGUE FAMILY.

1. **BOTRŸCHIUM** Sw. MOONWORT.

Frond-bud without hairs.
- Sporophyll and sterile leaf-blade not completely bent down in the bud.
  - Sporophyll erect in the bud, the sterile leaf-blade erect or with the apex bent over; segments of the sterile leaf commonly cuneiform or fan-shaped. 1. *B. simplex.*
  - Sporophyll and sterile leaf-blade with the apex or upper part bent down in the bud.
    - Sterile leaf-blade sessile or subsessile, once pinnately divided, the segments lunulate or fan-shaped. 2. *B. Lunaria.*
    - Sterile leaf-blade usually stalked, entire to twice pinnately divided, the segments mostly oblong or ovate. 3. *B. neglectum.*
- Sporophyll and sterile leaf-blade completely bent down in the bud; sterile leaf-blade deltoid. 4. *B. lanceolatum.*

Frond-bud hairy.
- Common stalk open along one side at base, usually long; sterile leaf-blade sessile. 5. *B. virginianum.*
- Common stalk completely closed at base, usually short; sterile leaf-blade stalked.
  - Sterile leaf-stalk 1–4 cm. long; plant very stout and fleshy. 6. *B. Coulteri.*
  - Sterile leaf-stalk usually 5 cm. long or more; plant not so fleshy, often slender. 7. *B. silaifolium.*

FAMILY 2. **POLYPODIACEAE.** FERN FAMILY.

Fertile fronds, with contracted berry-like or necklace-like subdivisions, not foliaceous.
- Veins of the sterile fronds netted. 1. ONOCLEA.
- Veins of the sterile fronds free. 2. PTERETIS.

Fertile and sterile fronds foliaceous, alike or differing; veins free.
- Sori on the under surface of the fronds, each provided with a special indusium not connected with the margin of the frond.
  - Sori roundish.
    - Indusia inferior or attached at base at one side of the sorus.
      - Indusia inferior, stellate or split into spreading lobes. 3. WOODSIA.
      - Indusia attached at base at one side of the sorus, at first arched over it, finally thrown back or evanescent. 4. FILIX.
    - Indusia superior.
      - Indusia peltate. 5. POLYSTICHUM.
      - Indusia orbicular-reniform, adherent at the sinus.
        - Midveins and midribs united at a wide angle; fronds usually provided with true hairs, consisting of a single cell or a single row of cells. 6. THELYPTERIS.
        - Midveins and midrib united at a very acute angle; fronds lacking true hairs. 7. DRYOPTERIS.
  - Sori oblong or linear, or shaped like a horseshoe or shepherd's crook.
    - Sori all straight or rarely slightly curved, single on the sides of the veins. 8. ASPLENIUM.
    - Sori, at least in part, shaped like a horseshoe or shepherd's crook, crossing the fertile vein and more or less recurved upon it. 9. ATHYRIUM.

Sori naked, or protected, at least at first, by the revolute or reflexed margins or portions of the margins of the frond.
Margin of the frond flat or merely revolute, not modified.
Margin of the frond revolute; sori more or less confluent, forming a marginal band. 16. NOTHOLAENA.
Margin of the frond flat; sori dot-like on the veins.
Stipes jointed to the rhizome. 15. POLYPODIUM.
Stipes not jointed to the rhizome. 6. THELYPTERIS.
Margin of the frond reflexed over the sori, more or less modified.
Sori borne on the under side of reflexed lobes of the frond. 10. ADIANTUM.
Sori not borne on the under side of the reflexed portions of the margin of the frond.
Sori borne on a continuous vein-like receptacle connecting the ends of the veinlets. 11. PTERIS.
Sori borne on the veins at or near their tips.
Sori extending down the veins; edges of the fertile fronds finally opening out flat; sterile and fertile fronds markedly dissimilar. 12. CRYPTOGRAMMA
Sori marginal or submarginal; sterile and fertile fronds alike or somewhat dissimilar.
Sori confluent, forming a submarginal band; segments of the fronds glabrous or nearly so. 13. PELLAEA.
Sori distinct or contiguous; segments usually pubescent, tomentose or scaly. 14. CHEILANTHES.

1. ONOCLÈA L. SENSITIVE FERN. 1. *O. sensibilus.*

2. PTERÈTIS Raf. OSTRICH FERN. 1. *P. nodulosa.*

3. WOÒDSIA R. Br.

Stipe articulate near the base. 1. *W. glabella.*
Stipe not articulate.
Blades pulverulent, with flattened articulate hairs and stalked glands. 2. *W. scopulina.*
Blades without articulate hairs, unless at the ends of the indusia or segments, glabrous or minutely glandular.
Indusia very small, divided almost to the center into a few hair-like filaments. 3. *W. oregana.*
Indusia large, cleft more or less deeply into several lobes.
Lobes of the indusia divided at least halfway down into slender articulate flattened hairs. 4. *W. mexicana.*
Lobes of indusia merely jagged, rarely with an occasional jointed extension, often glandular. 5. *W. obtusa.*

4. FÌLIX Adans.

Blades of the fronds deltoid-lanceolate or broadly lanceolate, twice or thrice pinnate.
Blades elongate deltoid-lanceolate, 3–12 dm. long; basal pair of pinnae the largest. 1. *F. bulbifera.*
Blades broadly lanceolate, 2–4.5 dm. long; basal pair of pinnae usually slightly shortened. 2. *F. fragilis.*
Blades of the fronds deltoid-ovate, three to four times pinnate. 3. *F. montana.*

5. POLÝSTICHUM Roth. HOLLY FERN, CHRISTMAS FERN.

Blades normally simply pinnate; pinnae auricled or the upper side at base, obliquely truncate at the lower.
Fronds very short-stalked; pinnae broadly lanceolate, falcate, on the lower triangular. 1. *P. lonchitis.*
Fronds rarely very short-stalked; pinnae horizontal, slightly falcate, lanceolate or linear, acuminate. 2. *P. munitum.*
Blades normally more compound.
Blades proliferous below the apex. 3. *P. Andersoni.*
Blades not proliferous.
Pinnae serrate in the distal part, pinnately lobed at base. 4. *P. scopulinum.*
Pinnae pinnately divided almost throughout the blade, commonly fully bipinnate. 5. *P. Braunii.*

6. THELÝPTERIS Schmidel.

Blades of the fronds bipinnatifid.
Blades broadest at base, or only the basal pair of pinnae slightly shortened. 1. *T. Phegopteris.*
Blades gradually much narrowed toward base. 2. *T. Oreopteris.*
Blades of the fronds ternate or subternate, once to twice pinnate.
Fronds glabrous, excepting a few scales on the stipe, or with only occasional microscopic trichomes resembling rudimentary glands. 3. *T. Dryopteris.*
Fronds distinctly glandular, especially the stipes and rachises; glands capitate. 4. *T. Robertiana.*

7. DRYÓPTERIS Adans. SHIELD FERN, MALE FERN.

Indusia comparatively large, not dot-like.
Sori not close to the margin.

Rachis usually conspicuously chaffy; fronds 4.5–40 cm. long. 1. *D. fragrans.*
Rachis naked or not noticeably chaffy; fronds 16–110 cm. long.
Pinnae triangular-oblong, or the lowest nearly triangular-ovate. 2. *D. cristata.*
Pinnae linear-lanceolate from a somewhat broader base. 4. *D. Filix-mas.*
Sori close to the margin. 3. *D. marginalis.*
Indusia minute, dot-like; blades bipinnatifid to tripinnate.
Pinnules decurrent on the narrowly-winged midribs; indusia glabrous. 5. *D. spinulosa.*
Larger pinnules not decurrent.
Indusia, and frond when young, conspicuously glandular. 6. *D. intermedia.*
Indusia glabrous or with only a few glands. 7. *D. dilatata.*

8. ASPLÈNIUM L. Spleenwort.

Blade irregularly forking. 1. *A. septentrionale.*
Blade not forking.
Blade simply pinnate.
Stipe brown below; rachis green. 2. *A. viride.*
Stipe and rachis chestnut-brown or blackish.
Pinnae not auricled. 3. *A. Trichomanes.*
Pinnae auricled at base on the upper or both sides. 4. *A. platyneuron.*
Blade bi- to tripinnatifid. 5. *A. Adiantum-nigrum.*

9. ATHÝRIUM Roth. Lady Fern.

Pinnules commonly somewhat cuneate at base, sometimes appearing short-stalked; indusia rarely seen, very minute and evanescent. 1. *A. alpestre.*
Pinnules more or less parallel at base down to the rachis, at least on the upper side; indusia evident.
Indusia straight or variously curved, often shaped like a shepherd's crook. 2. *A. filix-foemina.*
Indusia mostly curved so as to appear circular with a narrow sinus. 3. *A. cyclosorum*

10. ADIÁNTUM (Tourn.) L. Maiden-hair Fern, Venus'-hair Fern.

Stipes forked into two rachises, which bear on upper side pinnae interspersed with single leaflets. 1. *A. pedatum.*
Stipes not forked at apex; blades alternately bipinnate or tripinnate.
Rachises wavy-flexuose; leaflets very short-stalked. 2. *A. modestum.*
Rachises strongly divaricate-flexuose; leaflets mostly conspicuously stalked. 3. *A. rimicola.*

11. PTÈRIS L. Brake, Bracken. 1. *P. aquilina.*

12. CRYPTOGRÀMMA R. Br. Rock-brake.

Fronds scattered; leaf-texture very delicate; stipes brown or brownish below or throughout. 1. *C. Stelleri.*
Fronds tufted; leaf-texture firm.
Stipes straw-colored. 2. *C. acrostichoides.*
Stipes chestnut-colored. 3. *C. densa.*

13. PELLÀEA Link. Cliff-brake.

Segments of the blade obtuse or acute, rarely a few mucronate.
Blades once pinnate, the pinnae mostly two-parted; stipes repeatedly marked with transverse crack-like depressions. 1. *P. Breweri.*
Blades once or twice pinnate; stipes not marked with transverse depressions.
Stipes and rachises reddish brown, entirely glabrous or with only few occasional long flaccid jointed hairs. 2. *P. glabella.*
Stipe and rachises purplish black, rather thickly clothed with slender flaccid jointed hairs. 3. *P. atropurpurea.*
Segments sharp-pointed or mucronate; blades once pinnate above, bipinnate below. 4. *P. mucronata.*

14. CHEILÁNTHES Sw. Lip-fern.

Blades scaly, not tomentose. 1. *C. Fendleri.*
Blades tomentose beneath, with or without scales.
Blades without scales. 2. *C. Feei.*
Blades having scales.
Ultimate segments oblong-oval; upper surface at first scantily webby, soon glabrous. 3. *C. gracillima*
Ultimate segments rounded, narrowed toward base; upper surface tomentose. 4. *C. Eatoni.*

15. NOTHOLÀENA R. Br.

Blades tomentose, not farinose beneath. 1. *N. Parryi.*
Blades whitish-farinose beneath, not hairy.
Rachises divaricate-flexuose. 2. *N. Fendleri.*
Rachises straight or nearly so, not divaricate-flexuose. 3. *N. nivea.*

16. POLYPÒDIUM [Tourn.] L. Polypody. 1. *P. hesperium.*

Family 3. **MARSILIACEAE.** Marsilia Family.

1. **MARSÍLEA** L.

Sporocarps with two distinct acute teeth separated by a rounded sinus, the upper tooth the longer, straight or curved. 1. *M. vestita.*
Sporocarps with the lower tooth short and blunt, the upper a mere rounded papilla or wanting. 2. *M. oligospora.*

Family 4. **SALVINIACEAE.** Salvinia Family.

1. **AZÓLLA** Lam. 1. *A. caroliniana.*

Family 5. **EQUISETACEAE.** Horsetail Family.

1. **EQUISÈTUM.** Horsetail.

Stem annual; spike rounded at the top; stomata scattered in the grooves of the stem.
Stems of two kinds, the fertile ones succulent, appearing earlier than the sterile ones.
Fertile stems simple, soon withering, branchless. 1. *E. arvense.*
Fertile stems, when older, producing branches, only the naked apex withering.
Branches compound; ridges with 2 rows of hooked spinules. 2. *E. sylvaticum.*
Branches simple; ridges with 3 rows of broad spinules. 3. *E. pratense.*
Stems of one kind; branches simple or none.
Teeth of the sheaths persistent; plant usually branched, at least in age.
Sheaths loose; teeth grooved, black with white margins; central cavity one-sixth of the diameter of the stem. 4. *E. palustre.*
Sheath close; central cavity one-half of the diameter of the stem or more.
Sheaths 7–8 mm. long; stem stout, sparingly branched. 5. *E. fluviatile.*
Sheaths less than 5 mm. long; stem slender, much branched. (Autumnal forms of) 1. *E. arvense.*
Teeth of the sheaths deciduous; plant unbranched or nearly so. 6. *E. kansanum.*
Stem perennial, evergreen (except sometimes in *E. laevigatum*), mostly simple; spike apiculate, with a rigid tip; stomata in regular rows.
Central cavity present; stem more than 6-angled, except sometimes in *E. variegatum.*
Teeth of the sheaths deciduous; stem tall and stout, many-grooved.
Stem tubercled, rough.
Sheath close, usually with a black or dark ring near the base, then grayish and with a narrow dark border at the base of the teeth.
Stem 1–2 m. high, stout; sheaths as broad as long. 7. *E. robustum.*
Stem 0.3–1 m. high, slender; sheath longer than broad. 8. *E. affine.*
Sheaths more ampliate above, green, with or without a narrow border, but no ring below. 9. *E. intermedium.*
Stem not tubercled, smooth; sheaths enlarged upwards, with or without a dark margin, but rarely with a ring below. 10. *E. laevigatum.*
Teeth of the sheaths persistent, white-margined; stem low, slender, 5–10-grooved. 11. *E. variegatum.*
Central cavity wanting; stem 6-angled. 12. *E. scirpoides.*

Family 6. **ISOETACEAE.** Quillwort Family.

1. **ISÒETES.** Quillwort.

Submerged species; leaves without peripheral bast-bundles.
Stomata absent; macrospores marked with confluent crests, more or less honeycombed. 1. *I. occidentalis.*
Stomata present; macrospores spinulose or tubercled.
Macrospores spinulose. 2. *I. Braunii.*
Macrospores with low tubercles. 3. *I. Bolanderi.*
Amphibious or terrestrial species; leaves with peripheral bast-bundles and stomata.
Macrospores, with low blunt isolated or confluent crests; peripheral bast-bundles 4. 4. *I. Howellii.*
Macrospores, with numerous minute tubercles or almost smooth; peripheral bast-bundles 3. 5. *I. Nuttallii.*

Family 7. **LYCOPODIACEAE.** Club-moss Family.

1. **LYCOPÒDIUM** L. Club-moss, Ground Pine.

Sporanges borne in the axils of ordinary leaves, which are not arranged in distinct spikes
Leaves hollow at base, all or mostly all ascending, of nearly one length. 1. *L. Selago.*
Leaves flattened, not hollow at base, spreading or deflexed, longer and shorter in alternating zones. 2. *L. porophilum.*
Sporanges borne in the axils of bracts arranged in spikes on the aerial branches.
Spikes sessile, or with stalks not more than 1 cm. long.
Aerial branches all simple. 3. *L. inundatum.*
Aerial branches, at least in part, branched.

Leaves of the ultimate divisions of the aerial branches in 4 rows. 4. *L. alpinum.*
Leaves of the ultimate divisions of the aerial branches in more than 4 rows.
Aerial branches tree-like. 5. *L. obscurum.*
Aerial branches not tree-like, mostly loosely forking or forming compact tufts.
Leaves of the ultimate divisions of the aerial branches in 5 rows. 6. *L. sitchense.*
Leaves of the ultimate divisions of the aerial branches in 8 rows. 7. *L. annotinum.*
Spikes borne on bracteate peduncles more than 2 cm. long.
Leaves of the divisions of the aerial branches in 4 rows. 8. *L. complanatum.*
Leaves of the divisions of the aerial branches in many rows. 9. *L. clavatum.*

Family 8. **SELAGINELLACEAE.** Little Clubmoss Family.

1. **SELAGINÉLLA.** Little Clubmoss, Selaginella.

Stem rooting only at the base; bracts of the spike broad, thin, spreading; macrospores spinulose. 1. *S. selaginoides.*
Stem rooting mostly their whole length; bracts of the spike narrower and thicker, appressed and closely imbricate.
Leaves without an apical bristle. 2. *S. mutica.*
Leaves with a distinct apical bristle.
Macrospores smooth or nearly so. 3. *S. montanensis.*
Macrospores with a network of thickened ridges.
Leaves abruptly acute; plant dense and tufted.
Apical bristle yellowish green. 4. *S. Watsonii.*
Apical bristle white.
Apical bristle 0.3–0.4 mm. long. 5. *S. Wallacei.*
Apical bristle 0.6–1.5 mm. long. 6. *S. densa.*
Leaves gradually tapering towards the apex; stem long, loose and spreading; apical bristle 0.5–1 mm. long. 7. *S. Underwoodii.*

James Canyon – 10.7.11.

GLOSSARY

Abnormal. Differing from the usual structure.
Abortion. Imperfect development or non-development of an organ.
Abortive. Imperfectly formed, rudimentary, or barren.
Abruptly pinnate. Pinnate without an odd leaflet at the end.
Acaulescent. Stemless or apparently so.
Accrescent. Growing larger after flowering.
Accumbent (cotyledon). Having the edges against the radicle or hypocotyl.
Acerose. Needle-shaped, as the leaves of pines.
Achene. A small, dry and hard, 1-celled, 1-seeded, indehiscent fruit.
Acicular. Slender needle-shaped.
Aculeate. Prickly; beset with prickles.
Acuminate. Tapering at the end.
Acute. Sharp-pointed, but less so than acuminate.
Adnate. An organ adhering to a different one; united, as the inferior ovary with the calyx-tube. *Adnate anther,* one attached for its whole length to the filament.
Adsurgent=assurgent.
Adventitious. Out of the usual place.
Adventive. Not indigenous, but apparently becoming naturalized.
Aequilateral. Equal-sided.
Aerial. Growing in or pertaining to the air: hence above the ground or the water.
Aestivation. The arrangement of the parts in a flower bud.
Alate. Winged.
Albumen. See Endosperm.
Alliaceous. Onion-like, in aspect or odor, or taste.
Alternate. Not opposite to each other.
Alveolar. Containing sockets or pits.
Alveolate. Honeycombed; having angular depressions separated by thin partitions.
Ament. A catkin, or peculiar scaly unisexual spike.
Amentaceous. Catkin-like, or catkin-bearing.
Amphitropous (ovule or seed). Half-inverted and straight, with the hilum lateral.
Amplexicaul. Clasping the stem.
Anastomosing. Connecting so as to form a well-defined network.
Anatropous (ovule). Inverted and straight, with the micropyle next the hilum.
Androecium. The whole set of stamens.
Androgynous. Having both staminate and pistillate flowers in the same inflorescence, or in *Carex* in the same spikelet, tne former above the latter.
-androus (in compounds). Having stamens.
Angiospermous. Having the seeds borne within a pericarp.
Annual. Of only one year's duration. *Winter annual,* a plant from autumn-sown seed which blooms and fruits in the following spring.
Annular. In the form of a ring.
Annulate. Furnished with a ring or annulus.
Annulus. A ring, like that of the sporecase of most ferns.
Anterior (in the flower). The side towards the bract (external).
Anther. The part of the stamen which contains the pollen.
Antherid, Antheridium (*-a*). The male organ of reproduction in ferns and mosses.
Antheriferous. Anther-bearing.
Anthesis. The time of expansion of a flower.
Apetalous. Having no petals.
Aphyllopodic. Without leaves at the base.
Aphyllous. Destitute of leaves, at least of green leaves.
Apical. Situated at the apex or tip.
Apiculate. With a minute point.
Appressed. Lying close and flat against.
Approximate. Near together.
Arachnoid. Cobwebby; of slender entangled hairs.
Arborescent. Tree-like, in size or shape.
Archegone, or *Archegonium* (plural *archegonia*). The female organ in mosses and ferns.
Arcuate. Bent or curved like a bow.
Areola (*-ae*). A little, usually angular, space on the surface.
Areolate. Marked out into little areas; reticulate.
Aril. A fleshy organ growing about the hilum.
Ariliform. Resembling an aril.
Arillate. Having an aril.
Aristate. Tipped by an awn or bristle.
Aristulate. Diminutive of aristate.
Articulate. Jointed; having a node or joint.
Ascending. Growing obliquely upward, or upcurved.
Asexual. Without sex.
Assurgent. Ascending.
Attenuate. Slenderly tapering; becoming very narrow.
Auricle. An ear-shaped appendage.
Auriculate. Furnished with auricles.
Awl-shaped. Sharp-pointed from a broader base.
Awn. A slender bristle-like organ.
Axial=Axile.
Axil. The upper angle formed by a leaf or branch with the stem.
Axile. In the axis of an organ.
Axillary. Borne at or pertaining to an axil.
Axis. The central line of any organ or support of a group of organs; a stem, etc.

Baccate. Berry-like.
Banner. Upper petal of the papilionaceous flower; vexillum or standard.
Barbed. Furnished with rigid points or short bristles, usually reflexed like the barb of a fish-hook.
Barbellate. Finely barbed.
Barbulate. Finely bearded.

Basal, Basilar. At or pertaining to the base.
Basifixed. Attached by the base.
Bast. The fibrous portion of the inner bark.
Beaked. Ending in a beak or prolonged tip.
Bearded. With long or stiff hairs of any sort; awns of grasses are sometimes called beard.
Berry. A fruit with pericarp wholly pulpy.
Bi- or *Bis-.* A Latin prefix signifying two, twice, or doubly.
Biconvex. Convex on both sides; lens-shaped.
Bidentate. Having two teeth.
Bidentulate. Diminutive of bidentate.
Biennial. Of two years' duration.
Bifid. Two-cleft.
Bilabiate. Two-lipped.
Bilocular. Two-celled.
Binate. Two together.
Bipinnate (leaf). Twice pinnate.
Bipinnatifid. Twice pinnatifid.
Biserial, Biseriate. Occupying two rows, one within the other.
Bisexual. Having both stamens and pistils.
Biternate. Twice ternate (principal divisions 3, each with 3 leaflets).
Bivalvular. Two-valved.
Bladdery. Thin and inflated.
Blade. The flat expanded part of a leaf.
Bract. A leaf, usually small, subtending a flower or flower-cluster, or a sporange.
Bracteate. With bracts.
Bracteolate. Having bractlets.
Bracteose. With numerous or conspicuous bracts.
Bractlet. A secondary bract, borne on a pedicel, or immediately beneath a flower; sometimes applied to minute bracts.
Bristle. A stiff hair or any similar outgrowth.
Bulb. A subterranean leaf-bud with fleshy scales or coats.
Bulbiferous. Bearing bulbs.
Bulblet. A small bulb, especially one borne upon the stem.
Bulbose, Bulbous. Bulb-like in form.

Caducous. Dropping off very early.
Calcarate. Produced into or having a spur.
Callus. An extension of the inner scale of a grass spikelet; a protuberance.
Calyculate. Having bracts around the calyx imitating an outer calyx.
Calyptrate. Furnished with a calyptra, or coming off as a lid or extinguisher.
Calyx. The outer of two series of floral leaves.
Campanulate. Bell-shaped.
Campylotropous (ovule or seed). So curved as to bring the apex and base nearly together.
Canaliculate. Channelled; longitudinally grooved.
Cancellate. Reticulated, with the meshes sunken.
Canescent. With gray or hoary fine pubescence.
Capillary. Hair-like in form; as fine as hair or slender bristles.
Capitate. Shaped like a head; collected into a head or dense cluster.
Capitellate. Diminutive of *capitate.*
Capitulum. A little head.
Capsular. Belonging to or of the nature of a capsule.
Capsule. A dry dehiscent fruit, composed of more than one carpel.
Carinate. Keeled; with a longitudinal ridge.
Carpel. The modified leaf forming the ovary, or a part of a compound ovary.
Carpophore. The slender prolongation of the floral axis which in the Umbelliferae supports the pendulous ripe carpels.
Cartilaginous. Of the texture of cartilage; firm and tough.
Caruncle. An appendage to a seed at the hilum.
Carunculate. With a caruncle.
Caryopsis. The grain; fruit of grasses, with a thin pericarp adherent to the seed.
Catkin. A scaly deciduous spike of flowers; an ament.
Caudate. With a slender tail-like appendage.
Caudex. The persistent base of an otherwise annual herbaceous stem.
Caudicle. Stalk of a pollen-mass in the Orchid and Milkweed families.
Caulescent. Having a manifest stem.
Cauline. Pertaining to the stem.
Cell. A cavity, of an anther or ovary.
Chaff. Thin dry scales.
Chaffy. Furnished with chaff, or of the texture of chaff.
Channelled. Deeply grooved longitudinally, like a gutter.
Chartaceous. Papery in texture.
Chlorophyll. Green coloring matter of plants.
Choripetalous. Applied to a corolla whose petals are distinct.
Chorisepalous. Applied to a calyx whose sepals are distinct.
Ciliate (foliar organs). Beset on the margin with a fringe.
Ciliolate. Minutely ciliate.
Cinereous. Ash-grayish; the color of ashes.
Circinate. Coiled downward from the apex.
Circumscissile. Transversely dehiscent, the top falling away as a lid.
Clavate. Club-shaped.
Claw. The narrow or stalk-like base of some petals.
Cleft. Cut about half-way to the midvein.
Cleistogamous. Fertilized in the bud, without the opening of the flower.
Coalescence. The union of parts or organs of the same kind.
Cochleate. Coiled or shaped like a snail shell.
Cohesion. The union of one organ with another.
Columella. A term applied to the persistent axis of the capsule.
Columnar. Like a column.
Coma. Tuft of hairs at the ends of some seeds.
Commissure. The surface by which one carpel joins another, as in the Umbelliferae.
Composite. A plant belonging to Carduaceae, Cichoriaceae, or Ambrosiaceae (constituting the old Compositae).
Concave. With the surface curved in.
Conduplicate. Folded lengthwise.
Conglomerate. Densely clustered.
Coniferous. Cone-bearing.
Connate. Similar organs more or less united.

Connective. The end of the filament between the anther-sacs.
Connivent. Converging.
Convolute. Rolled up longitudinally.
Coralloid. Resembling coral.
Cordate. Heart-shaped with the point upward.
Coriaceous. Leathery in texture.
Corm. The enlarged fleshy base of a stem, bulb-like but solid.
Corniculate. Furnished with a small horn or spur.
Corolla. The inner of two series of floral leaves.
Coroniform. Shaped like a crown.
Corrugate. Wrinkled or in folds.
Corymb. A convex or flat-topped flower-cluster of the racemose type, with pedicels or rays arising from different point on the axis.
Corymbose. Borne in corymbs; corymb-like.
Costa. A rib; the midrib of a leaf, etc.
Costate. Ribbed.
Cotyledon. A rudimentary leaf of the embryo.
Crateriform. In the shape of a saucer or cup, hemispherical or more shallow.
Creeping (stems). Growing flat on or beneath the ground and rooting.
Crenate. With rounded teeth.
Crenulate. Diminutive of crenate.
Crested, Cristate. Bearing any elevated appendage like a crest.
Crinite. Bearded with long hairs, etc.
Crown. An inner appendage to a petal, or to the throat of a corolla.
Crucifer. A member of *Brassicaceae*, or Mustard Family, from the cross-like corolla.
Crustaceous. Hard and brittle in texture; crust-like.
Cucullate. Hooded, or resembling a hood.
Culm. The stem of grasses and seges.
Cuneate, Cuneiform. Wedge-shaped.
Cupulate. Cup-shaped.
Cusp. A sharp stiff point.
Cuspidate. Sharp-pointed; ending in a cusp.
Cyme. A convex or flat flower-cluster of the determinate type, the central flowers first unfolding.
Cymose. Arranged in cymes; cyme-like.
Cymule. A small cyme.

Deciduous. Falling away at the close of the growing period.
Decompound. More than once compound or divided.
Decumbent. Reclining, but with the summit ascending.
Decurrent (leaf). Extending down the stem below the insertion.
Decussate. Alternating in pairs at right angles, or in threes.
Deflexed. Turned abruptly downward.
Dehiscence. The opening of an ovary, anther-sac, or sporange to emit the contents.
Dehiscent. Opening to emit the contents.
Demidiate. Appearing as if cut in half.
Dentate. Toothed, especially with outwardly projecting teeth.
Denticulate. Diminutive of dentate.
Dentiform. Tooth-like.
Depressed. Somewhat flattened from above.
Dextrorse. Turned to the right.
Di-, as a prefix in compounds, means two or twice.
Diadelphous (stamens). United by filaments in two sets.
Diandrous. Having two stamens.
Dicarpellary. Composed of two carpels.
Dichotomous. Forking regularly by pairs.
Dicotyledonous. Having two cotyledons.
Didymous. Twin-like.
Didynamous. With two stamens longer than the other two.
Diffuse. Loosely spreading.
Digitate. Diverging, like the fingers spread.
Digynous (flower). Having two pistils.
Dimerous. In two parts. Referring to a flower constructed on the numerical plan of two.
Dimorphism (in flowers). Possessing two forms of flowers, one with short styles and long stamens, the other with long styles and short stamens.
Dimorphous. Of two forms.
Dioecious. Bearing staminate flowers or antherids on one plant, and pistillate flowers or archegones on another of the same species.
Disciform, Disk-shaped. Flat and circular, like a disk or quoit.
Discoid. Heads of Compositae composed only of tubular flowers; rayless; like a disk.
Disk. A development of the receptacle at or around the base of the pistil. In Compositae, the tubular flowers of the head as distinct from the ray.
Dissected. Cut or divided into numerous segments.
Dissepiment. A partition-wall of an ovary or fruit.
Distichous. In two vertical ranks.
Distinct. Separate; not united; evident.
Divaricate. Widely divergent.
Divided. Cleft to the base or to the midrib.
Dorsal. On the back, pertaining to the back.
Dorsiventral. In the plane, running through the axis from above to below; contrary to lateral.
Drupaceous. Drupe-like.
Drupe. A simple fruit, usually indehiscent, with fleshy exocarp and bony endocarp.
Drupelet. Diminutive of drupe.

E- or *Ex-*, as a prefix in compounds, means destitute of.
Echinate. Prickly.
Ellipsoid. A solid body, elliptic in section.
Elliptic. With the outline of an ellipse; usually narrowly oval.
Emarginate. Notched at the apex.
Embryo. A rudimentary plant in the seed.
Emersed. Raised out of water.
Endocarp. The inner layer of the pericarp.
Endogenous. Forming new tissue within.
Endogens. Monocotyledons.
Endosperm. The substance surrounding the embryo of a seed; albumen.
Ensiform. Sword-shaped, as the leaves of *Iris*.
Entire. Without divisions, lobes, or teeth.
Ephemeral. Continuing for only a day or less.
Epicarp. The outer layer of the pericarp.
Epigynous. Upon the ovary.
Epiphyte. A plant that grows upon another plant, but does not derive its sustenance from it.

Epiphytic. Growing on other plants, but not parasitic.
Equitant. Astride, used of conduplicate leaves which enfold each other in two ranks, as in *Iris.*
Erose. Irregularly margined, as if gnawed.
Evanescent. Early disappearing.
Evergreen. Bearing green leaves throughout the year.
Excurrent. With a tip projecting beyond the main part of the organ.
Exfoliating. Peeling off in layers.
Exocarp. The outer layer of the pericarp.
Exogenous. Forming new tissue outside the older.
Exogens. Dicotyledons.
Exserted. Prolonged past surrounding organs.
Extravaginal innovation. Where the new shoot breaks through the basal sheath and produces a horizontal stolon.
Extrorse. Facing outward.

Falcate. Scythe-shaped.
Farinaceous. Mealy in texture.
Farinose. Covered with a mealy powder.
Fascicle. A dense cluster.
Fastigiate. Stems or branches which are nearly erect and close together.
Faveolate, Favose. Honeycombed; same as alveolate.
Fenestrate. With window-like markings.
Fenestration. Transparent spots or openings.
-ferous (in composition). Bearing.
Ferruginous. Color of iron-rust.
Fertile. Bearing spores, or bearing seed.
Fetid. Ill-smelling.
Fibrillate, Fibrillose. Furnished with or abounding in fine fibres.
Fibro-vascular. Composed of woody fibres and ducts.
Filament. The stalk of a stamen; also any slender thread-shaped appendage.
Filamentose, Filamentous. Bearing or formed of slender threads.
Filiform. Thread-like.
Fimbriate. Fringed.
Fimbrillate. Minutely fringed.
Fistular, Fistulose. Cylindrical and hollow, as the leaves of an onion.
Flabellate, or *Flabelliform.* Fan-shaped; applied to leaves, etc.
Flaccid. Without rigidity; lax and weak.
Flagellate. Producing slender runners.
Flagelliferous. Bearing flagella.
Flagellum (*-a*). A slender runner as in the strawberry plant.
Flexuous. Zigzag; bending alternately in opposite directions.
Floccose. With loose tufts of wool-like hairs.
Floret. A small flower, usually one of a dense cluster.
Foliaceous. Leaf-like in texture or appearance.
-foliate. Having leaves.
Foliolate. With separate leaflets.
-foliolate. Having leaflets.
Foliose. Leafy.
Follicle. A fruit consisting of a single carpel, dehiscing by the ventral suture.
Follicular. Like a follicle.
Fornicate. Arched over, as the corona of some Boraginaceae, closing the throat of the corolla.
Fornix (*-ces*). Small arching crest in the throat of the corolla.
Foveate, Foveolate. More or less pitted.
Free. Not adnate to other organs.
Frond. The leaf of ferns and some other cryptogams; in Lemnaceae, the thallus-like stem which functions as foliage.
Frutescent, Fruticose. More or less shrub-like.
Fugacious. Soon falling off or perishing.
Funiculus. The stalk of an ovule or seed.
Funnelform, Funnel-shaped. Expanding gradually upwards, like a funnel.
Furfuraceous. Resembling bran; scurfy.
Fuscous. Grayish brown.
Fusiform. Spindle-shaped; swollen in the middle and narrowing toward each end.

Galea. A hood-like part of a perianth or corolla; upper lip of a two-lipped corolla.
Galeate. Helmet-shaped; having a galea.
Gamopetalous. With united petals; same as *monopetalous* and *sympetalous.*
Gamosepalous. With united sepals; same as monosepalous.
Geminate. Like twins.
Geniculate. Bent abruptly, like a knee, as many stems.
Gibbous. Enlarged or swollen on one side.
Glabrate. Becoming glabrous with age, or almost glabrous.
Glabrous. Devoid of hairs.
Gland. A secreting cell, or group of cells.
Glandular. With glands, or gland-like.
Glaucous. Covered or whitened with a bloom.
Globose. Spherical or nearly so.
Glochidiate. Barbed at the tip.
Glomerate. In a compact cluster.
Glomerule. A dense capitate cyme.
Glumaceous. Resembling glumes.
Glume. The scaly bracts of the spikelets of grasses and sedges.
Glutinous. Covered with a sticky exudation.
Granuliferous. Bearing or covered with small granules.
Gregarious. Growing in groups or colonies.
Gymnospermous. Bearing naked seeds, without an ovary.
Gynaecandrous. Having staminate and pistillate flowers in the same spikelet, the latter above the former.
Gynandrous. Having the stamens and pistils more or less united.
Gynobase. A prolongation or enlargement of the receptacle supporting the ovary.
Gynaphore. An elongation of the receptacle bearing the pistil; a stalk of the pod made up from a part of the receptacle; compare stipe.
Gynoecium. The whole set of pistils.
Gynophore. A stalk raising a pistil above the insertion of the stamens.

Habit. The general aspect of a plant, or its mode of growth.
Habitat. The situation in which a plant grows in a wild state.
Halberd-shaped. The same as hastate.
Hamate. Crooked, hooked.
Hastate. Halberd-shaped; like sagittate, but with the basal lobes diverging.
Head. A dense cluster of sessile or nearly sessile flowers on a very short axis or receptacle.
Hemispheric. Shaped like half a globe.
Herb. A plant with no persistent woody stem above ground.
Herbaceous. Leaf-like in texture and color; pertaining to an herb.

Hermaphrodite (flower). Having both stamens and pistils; same as perfect.
Heterogamous. Producing more than one kind of flowers.
Heteromorphous. Having flowers of different forms as regards the size or relative position of the essential organs.
Hexa-, in compounds, means six.
Hexamerous. Consisting of six parts or members. Applied to a flower that is constructed on the numerical plan of six.
Hilum. The scar or area of attachment of a seed or ovule.
Hirsute. With rather coarse stiff hairs.
Hirtellous. Minutely hirsute.
Hispid. With bristly stiff hairs.
Hispidulous. Diminutive of hispid.
Hoary. Grayish white; see *canescent.*
Homogamous. A head or cluster with flowers all of one kind.
Hyaline. Thin and translucent.
Hybrid. A cross between two species.
Hydrophilous. Water-loving.
Hydrophyte. A water-plant.
Hypanthium. A calyx-like enlargement of the flower-axis or receptacle, often surrounding or enclosing the pistils and bearing the calyx and corolla and often the stamens on its margin.
Hypocotyl. The rudimentary stem of the embryo; also termed *radicle.*
Hypogynous. Inserted under the pistil.

Imbricate. Overlapping (as shingles on a roof).
Immersed. Growing wholly under water.
Imperfect flowers. Wanting either stamens or pistils.
Inaequilateral. Unequal-sided, as the leaf of *Begonia.*
Incised. Cut sharply and irregularly, more or less deeply.
Incision. A cut; a narrow opening between two lobes.
Included. Not at all protruded from the surrounding envelope.
Incumbent (embryo). Cotyledons with the back of one of them against the hypocotyl.
Indehiscent. Not splitting open.
Indigenous. Native to the country.
Induplicate. Valvate aestivation in which the margins of the leaves are inflexed or folded inward.
Indurated. Hardened.
Indusiate. With an indusium.
Indusium. The proper (often shield-shaped) covering of the sorus or fruit-dot in Ferns.
Inequilateral. Unequal-sided.
Inferior. Lower or below; outer or anterior. *Inferior ovary,* one that is adnate to the hypanthium.
Inflated. Turgid and bladdery.
Inflexed. Bent inwards.
Inflorescence. The flowering part of plants; its mode of arrangement.
Infra- (in compound words). Below, being below.
Infra-axillary. Inserted some distance below the axils.
Innocuous. Harmless, hence unarmed or spineless.
Innovation. An offshoot from the stem.
Inserted. Attached to or growing out of.
Insertion. The place or the mode of attachment of an organ to its support.
Inter- or *intra-.* In composition, between.
Internerve. Space between the nerves.
Internode. Portion of a stem or branch between two nodes.
Interval. Space between ridges.
Intramarginal. Within and near the margin.
Intravaginal innovation. Where the new shoot starts inside a basal sheath and continues to grow, remaining between it and the stem.
Introrse. Facing inward.
Involucel. A secondary involucre.
Involucrate. With an involucre, or like one.
Involucre. A whorl of bracts subtending a flower or flower-cluster.
Involute. Rolled inwardly.
Irregular. A flower in which one or more of the organs of the same series are unlike the rest.
Isabel-colored. Dirty yellowish white.

Keel. A projecting ridge on a surface, like the keel of a boat; the two anterior petals of a papilionaceous corolla.

Labellum. The odd (lower) petal of orchids.
Labiate. Lipped; belonging to the Labiatae or LAMIACEAE.
Lacerate. Irregularly cleft, as if torn.
Lacinia (*-ae*). Lobe.
Laciniate. Cut into narrow lobes or segments.
Lamina. A plate or blade; the blade of a leaf or a petal.
Lanate. Woolly; clothed with long and soft entangled hairs.
Lanceolate. Considerably longer than broad, tapering upward from the middle or below; lance-shaped.
Lanose. Densely lanate.
Lanuginous. Cottony or woolly.
Lateral. Belonging to or borne on the side.
Latex. The milky sap of certain plants.
Lax. Loose and slender.
Leaflet. One of the divisions of a compound leaf.
Legume. A simple dry fruit, dehiscent along both sutures.
Leguminosae. Plants of the families Fabaceae, Caesalpiniaceae, and Mimosaceae.
Leguminous. Pertaining to a legume or to the Leguminosae.
Lenticels. Small oval dots which appear upon the branches of cork-forming Dicotyledons during the first year's growth, and which, by further growth during the early part of the second year, rupture the epidermis.
Lenticular. Lens-shaped.
Lepidote. Beset with small scurfy scales.
Ligneous. Woody, or having a woody texture.
Ligulate. Provided with or resembling a ligule.
Ligule. A strap-shaped corolla, as in the ray-flowers of Compositae; a thin scarious projection from the summit of the sheath in grasses.
Limb. The expanded part of a petal, sepal, or gamopetalous corolla.
Linear. Long and narrow, with parallel margins.
Lip. The principal lobes of a bilabiate corolla or calyx; the odd and peculiar petal in the orchis family; the labellum.
-locular. In composition, having cells.

Loculicidal (dehiscence). Splitting down through the middle of the back of each cell.
Lodicules. Minute hyaline scales subtending the flower in grasses.
Loment. A jointed legume, usually constricted between the seeds.
Lunate. Crescent-shaped.
Lunulate. Diminutive of lunate.
Lurid. Dirty brown.
Lutescent. Yellowish, or becoming yellow.
Lyrate. Pinnatifid, with the terminal lobe or segment considerably larger than the others.

Macrosporange. Sporange containing macrospores.
Macrospore. The larger of two kinds of spores borne by a plant, usually giving rise to a female prothallium.
Magenta. A glaring red.
Mammillate. Furnished with nipple-shaped processes.
Marcescent. Withering, but remaining attached.
Medullary. Pertaining to the pith or medulla.
Membranaceous, Membranous. Thin and rather soft and more or less translucent.
-merous. In composition, having parts, as 2-merous, having two parts of each kind.
Mesa. Dry tableland.
Mesocarp. The middle layer of a pericarp.
Micropyle. Orifice of the ovule, and corresponding point on the seed.
Microsporange. Sporange containing microspores.
Microspore. The smaller of two kinds of spores borne by a plant, usually giving rise to a male prothallium; pollen-grain.
Midrein, Midrib. The central vein or rib of a leaf or other organ.
Monadelphous. Stamens united by their filaments into one set.
Moniliform. Like a string of beads.
Monocephalous. Bearing only one head.
Monocotyledonous (embryo). Having only one cotyledon.
Monoecious. Bearing stamens and pistils on the same plant, but in different flowers.
Mucro. A short and small abrupt tip.
Mucronate. With a short sharp abrupt tip.
Mucronulate. Diminutive of mucronate.
Multicellular. Consisting of many cells.
Multifid. Cleft into many lobes or segments.
Multilocular. Possessing many loculi or cavities.
Muricate. Roughened with short hard processes.
Muriculate. Very finely muricate.
Muticous. Pointless, or blunt.

Napiform. Turnip-shaped.
Naturalized. Plants not indigenous to the region, but so firmly established as to have become part of the flora.
Nectariferous. Nectar-bearing; having a nectary.
Nectary. An organ which secretes nectar.
Nerve. A simple or unbranched vein or slender rib.
Nigrescent. Becoming black or blackish.
Node. The place upon a stem which normally bears a leaf or whorl of leaves.
Nodose. Furnished with knots or nodes.
Nodulose. Diminutive of nodose.
Nut. An indehiscent one-seeded fruit with a hard or bony pericarp.
Nutlet. Diminutive of nut.

Ob-, as a prefix, signifies inversion, as follows:
Obcompressed. Flattened the opposite of the usual way.
Obconic. Conical, but with the point of attachment at the apex.
Obcordate. Inversely heart-shaped.
Oblanceolate. Inverse of lanceolate.
Oblong. Longer than broad, with the sides nearly parallel, or somewhat curving.
Obovate. Inversely ovate.
Obovoid. Inversely ovoid.
Obpyramidal. Inverted pyramidal, i. e., pyramidal with the base uppermost.
Obsolete. Imperfectly developed or rudimentary.
Obtuse. Blunt, or rounded.
Ochroleucous. Yellowish white.
Ocrea. A sheathing stipule.
Ocreate. Having sheathing stipules.
Offset. Short branch next the ground which takes root.
Opaque. Not transparent.
Operculate. With an operculum.
Operculum. A lid.
Orbicular. Approximately circular in outline.
Orthotropous (ovule or seed). Erect, with the orifice or micropyle at the apex.
Oval. Broadly elliptic.
Ovary. The part of the pistil that contains the ovules.
Ovate. In outline like a longitudinal section of a hen's egg.
Ovoid. Shaped like a hen's egg.
Ovule. The macrosporange of flowering plants, becoming the seed after fertilization.
Ovuliferous. Bearing ovules.

Palate. A rounded projection of the lower lip of a personate corolla, closing the throat.
Palea (plural *paleae*). Chaff; the chaff or bracts on the receptacle of many Compositae.
Paleaceous. Chaffy.
Palet. The upper thin chaffy or hyaline bract which with the lemna encloses the flowers in Grasses.
Pallid. Pale.
Palmate. Diverging radiately like the fingers.
Palmately. In a palmate manner.
Panduriform. Same as fiddle-shaped.
Panicle. A compound flower-cluster of the racemose type.
Panicled, Paniculate. Borne in a panicle; resembling a panicle.
Pannose. Of the appearance or texture of felt.
Papilionaceous (corolla). Having a standard, wings, and keel, as in the peculiar corolla of the Pea Family.
Papilla. A little nipple-shaped protuberance.
Papillate, Papillose. Covered with papillae.
Pappiferous. Pappus-bearing.
Pappus. The modified calyx-limb in Compositae, forming a crown of very various character at the summit of the achene.
Papyraceous. Having a papery texture.

Parasitic. Growing on and deriving nourishment from another plant.
Parietal. Borne on or pertaining to the wall or inner surface of a capsule.
Parted. Cleft nearly, but not quite to the base.
Pectinate. Pinnatifid with narrow, closely set segments; comb-like.
Pedate. Palmately divided or parted, with the lateral segments 2-cleft.
Pedicel. The stalk of a single flower in a flower-cluster.
Pedicellate, Pedicelled. Furnished with a pedicel.
Peduncle. A primary flower-stalk, supporting either a cluster or a solitary flower.
Peduncled, Pedunculate. Furnished with a peduncle.
Peltate. Shield-shaped; a flat organ, with a stalk on its lower surface.
Pendulous. More or less hanging or declined. *Pendulous ovule,* one that hangs from the side of the cell.
Penicillate. With a tuft of hairs or hair-like branches.
Penta-, in compounds, means five.
Pentagonal. Five-angled.
Perennial. Lasting from year to year.
Perfect (flower). Having both stamens and pistils.
Perforated. With holes.
Perianth. The floral envelopes of the flower, especially used when calyx and corolla cannot be distinguished.
Pericarp. The wall of the fruit, or seed-vessel.
Perigynium (-a). The more or less inflated sac-like organ surrounding the pistil in *Carex.*
Perigynous. Borne around the ovary.
Persistent. Long-continuous, as a calyx upon the fruit, leaves through winter, etc.
Personate. Masked; bilabiate, and the throat closed by a prominent palate.
Petal. One of the leaves of the corolla.
Petaloid. Petal-like; resembling or colored like petals.
Petiolate. Having a petiole.
Petiole. The leaf-stalk.
Petioled. Furnished with a petiole.
Petiolulate. With a petiolule (leaflet).
Petiolule. The stalk of a leaflet.
Phaenogamous. Having flowers with stamens and pistils and producing seeds.
Phyllode, Phyllodium (-a). A somewhat dilated petiole having the form of and serving as a leaf-blade.
Phyllopodic. With a leafy base.
-phyllous (in composition). With leaves as *gamophyllous,* with united leaves, and *diphyllous,* with two leaves, etc.
Pilose. Hairy, with soft hairs.
Pinna (pl. *Pinnae*). One of the primary divisions of a pinnate or compoundly pinnate frond or leaf.
Pinnate (leaf). Compound, with the leaflets arranged on each side of a common petiole.
Pinnatifid. Pinnately cleft.
Pinnatisect. Pinnately divided.
Pinnule. A division of a pinna.
Pistil. The central organ of a flower containing the macrosporanges (ovules).
Pistillate. Provided with pistils, and, in its more proper sense, without stamens.
Pitted. Marked with small depressions or pits.
Placenta. An ovule-bearing surface.
Plane. With a flat, not curved surface.
Planoconvex. Plane on one side and convex on the other.
Plicate. Folded into plaits, like a fan.
Plumose. Having fine hairs on each side, like the plume of a feather.
Plumule. The rudimentary terminal bud of the embryo.
Pod. Any dry and dehiscent fruit.
Pointed. Acuminate.
Pollen. Pollen grain. See Microspore.
Pollinia. The pollen-masses of the Orchid and Milkweed Families.
Polliniferous. Bearing pollen.
Poly-, in compounds, means many.
Polyadelphous. Applied to stamens which are united by their filaments into many sets.
Polygamous. Bearing both perfect and imperfect flowers.
Polymorphous. Of several forms.
Polypetalous. Possessing many petals. Applied by the older botanists to flowers having the petals distinct or ununited.
Polysepalous. When the sepals are distinct.
Pome. The fleshy fruit of the Apple Family.
Posterior. On the side towards the axis; see *anterior.*
Prickles. Sharp elevations of the bark, and coming off with it, as in the rose.
Prismatic. Of the shape of a prism, angular, with flat sides, and of nearly uniform size throughout.
Procumbent. Trailing on the ground.
Proliferous. Bearing offsprings; a shoot, a branch, a rosette, or a flower producing a shoot ending in a similar organ.
Prostrate. Lying flat upon the ground.
Prothallium. The sexual generation of *Pteridophyta.*
Pruinose. Frosted; covered with a powder like hoar-frost.
Pseudo (in combinations). Falsely.
Pteridophytes. Fern-plants; ferns and their allies.
Puberulent. Minutely pubescent.
Pubescent. Covered with hairs.
Pulverulent. Dusted; covered apparently with fine powder.
Pulvinate. Cushioned, or shaped like a cushion.
Punctate. Dotted with depressions or with translucent internal glands or colored dots.
Puncticulate. Minutely punctate.
Pungent. Terminating in a rigid sharp point; acrid.
Pustular, Pustulate. With blister-like elevations.
Pustule. Blister or blister-like process.
Putamen. The bony part of a stone-fruit.
Pyriform. Pear-shaped.
Pyxis. A capsule whose dehiscence is circumscissile, or which opens by a circular, horizontal line, so that the upper part comes off like a lid.

Quadrate. Nearly square in form.

Raceme. An elongated indeterminate flower-cluster with each flower pedicelled.
Racemose. In racemes, or resembling a raceme.
Rachilla. The axis of the spikelet in grasses.
Rachis. The axis of a compound leaf, or of a spike or raceme.
Radially. Spreading from a common center.

Radiant. With the marginal flowers enlarged and ray-like.
Radiate. Bearing ray-flowers; spreading from or arranged around a common center.
Radical. Belonging to the root, or apparently coming from the root.
Radicle. The rudimentary stem of the embryo; hypocotyl.
Rameal. Belonging to a branch.
Ramification. Branching.
Ray. One of the peduncles or branches of an umbel; the flat marginal flowers in Compositae.
Receptacle. The end of the flower stalk, bearing the floral organs; or, in Compositae, bearing the flowers; also in some ferns, an axis bearing sporanges.
Reclined. Turned or curved downwards.
Recurved. Curved backwards.
Reflexed. Bent backward abruptly.
Regular. Having the members of each part alike in size and shape.
Reniform. Kidney-shaped.
Repand. With a somewhat wavy margin.
Replicate. That form of vernation in which the apex of the leaf is bent backward toward the base.
Replum. The septum of certain pods that persists after the valves have fallen away.
Resiniferous. Producing resin.
Reticulate. In the form of network.
Retrorse. Directed back or downward.
Retuse. With a shallow notch at a rounded apex.
Revolute. Rolled backward.
Rhaceola. The prolongation of the secondary axis at the spikelets of sedges, within the perigynium; compare *rachilla.*
Rhachis. See Rachis.
Rhizome. See Rootstock.
Rhombic, Rhomboidal. Somewhat lozenge-shaped; obliquely four-sided.
Rib. A primary or prominent vein of a leaf.
Ringent. Gaping, as the mouth of an open bilabiate corolla.
Rostellum. Beak of the style in Orchids.
Rostrate. Bearing a beak or a prolonged appendage.
Rosulate. In the form of a rosette.
Rosuliferous. Bearing rosettes.
Rotate (corolla). Wheel-shaped; flat and circular in outline.
Rotund. Rounded in outline.
Rudiment. A very partially developed organ; a vestige.
Rudimentary. Imperfectly developed, or in an early stage of development.
Rufous. Reddish brown.
Rugose. Wrinkled.
Runcinate. Sharply pinnatifid or incised, the lobes or segments turned backward.
Runner. A filiform or very slender stolon.

Sac. A pouch, especially the cavities of anthers.
Saccate. Like a sac or pouch; furnished with a sac.
Sagittate. Like an arrow-head, with the lobes turned downward.
Salver-shaped (corolla). Having a slender tube abruptly expanded into a flat limb.
Samara. An indehiscent winged fruit.
Saprophyte. A plant which grows on dead organic matter.
Scabrous. Rough to the touch.
Scale. A minute, rudimentary, or vestigial leaf.
Scape. A peduncle rising from the ground, naked or without proper foliage.
Scapose. Bearing or resembling a scape.
Scarious. Thin, dry, and translucent, not green.
Scorpioid. Coiled up in the bud, or in the beginning of growth, unrolling in expanding.
Scrobiculate. Possessing minute or shallow depressions.
Secund. Borne along one side of an axis.
Segment. One of the parts of a leaf or other like organ that is cleft or divided.
Semi- (in compounds) means half.
Sepal. One of the leaves of a calyx.
Septate. Divided in compartments by cross-partitions.
Septicidal (capsule). Dehiscing through the partitions and between the cells.
Septum (plural *septa*). A partition, as of a pod, etc.
Sericeous. Silky; clothed with satiny pubescence.
Serrate. Having teeth pointing forward.
Serrulate. Finely serrate.
Sessile. Without a stalk.
Seta (*-ae*). A bristle, or a slender body resembling a bristle.
Setaceous. Bristle-like.
Setose. Bristly.
Setulose. Having minute bristles.
Sheath. A tubular envelope, as the lower part of the leaf in grasses.
Sheathing. Enclosing as by a sheath.
Silicle. A short silique.
Silique. The peculiar pod of Brassicaceae.
Sinuate. Strongly wavy.
Sinus. The cleft or recess between two lobes.
Smooth. Without roughness.
Sobol, Sobole. A creeping underground stem.
Soboliferous. Bearing underground mostly horizontal branches.
Sorus (pl. *Sori*). A heap or cluster, applied to the fruit-dots of ferns.
Spadiceous. Like or pertaining to a spadix.
Spadix. A fleshy spike of flowers.
Spathaceous. Resembling a spathe, furnished with a spathe.
Spathe. A bract, usually more or less concave, subtending a spadix.
Spatulate. Shaped like a spatula; spoon-shaped.
Spermatozoid. A motile ciliated male reproductive cell.
Spicate. Arranged in or resembling a spike.
Spiciform. Spike-like.
Spike. An elongate flower-cluster, with sessile or nearly sessile flowers.
Spikelet. Diminutive of spike; especially applied to flower-clusters of grasses and sedges.
Spine. A sharp woody or rigid outgrowth from the stem.
Spinescent. Tipped by or degenerating into spines or thorns.
Spinose. Thorny; with spines or similar to spines.
Spiricle. Delicate coiled thread on the surface of seeds and achenes.
Spirilliferous. Bearing or having spiricles.
Spirillum (*-a*). A little coil, spiricle.
Sporange, Sporangium (*-a*). A sac containing spores.
Spore. The reproductive organ in Cryptogams which corresponds to a seed.

Sporocarp. The fruit-cases of certain Cryptogams containing sporangia or spores.
Sporophyll. A spore-bearing leaf.
Sporophyte. The asexual generation of plants.
Spreading. Diverging nearly at right angles; nearly prostrate.
Spur. A hollow projection.
Squamella (*-ae*) A scale-like member of the pappus of some composites.
Squamiform. Resembling a scale.
Squarrose. With spreading or projecting parts.
Stamen. The organ of a flower which bears the microspores (pollen-grains).
Staminate. Possessing stamens. Applied to flowers which have stamens but not pistils.
Stameniferous. Bearing stamens.
Staminodium. A sterile stamen, or other organ in the position of a stamen.
Standard. The upper, usually broad, petal of a papilionaceous corolla.
Stellate. Star-like.
Sterigmata. The projection from twigs, bearing the leaves, in some genera of Pinaceae.
Sterile. Without spores, or without seed.
Stigma. That part of a pistil through which fertilization by the pollen is effected.
Stigmatic. Belonging to or characteristic of the stigma.
Stipe. The stalk-like lower portion of a pistil; the leaf-stalk of a fern.
Stipitate. Provided with a stipe.
Stipular. Belonging to stipules.
Stipulate. Having stipules.
Stipules. The appendages on each side of the base of certain leaves.
Stolon. A basal branch rooting at the nodes.
Stoloniferous. Producing or bearing stolons.
Stoma (pl. *Stomata*). An orifice in the epidermis of a leaf communicating with internal air-cavities.
Stramineous. Straw-colored.
Striate. Marked with slender longitudinal grooves or channels.
Strict. Very straight and upright.
Strigillose. Diminutive of strigose.
Strigose. With appressed stiff hairs.
Strobilaceous. Like a pine-cone.
Strobile. An inflorescence marked by imbricated bracts or scales, as in the pine-cone.
Strophiolate. With a strophiole.
Strophiole. An appendage to a seed at the hilum.
Style. The usually attenuated portion of the pistil connecting the stigma and ovary.
Stylopodium. A disk-like expansion at the base of a style, as in Umbelliferae.
Sub- (in compound words). Somewhat, almost, in a subordinate grade, of inferior rank, beneath.
Submarginal. Near the margin; situated under the margin.
Subulate. Awl-shaped.
Succulent. Soft and juicy.
Sucker. A shoot from subterranean branches.
Suffrutescent. Slightly or obscurely shrubby.
Suffruticose. Very low and woody; diminutively shrubby.
Sulcate. Grooved longitudinally.
Supra- (in compound words). Above, being above.
Supra-axillary. Inserted some distance above the axils.
Surculose. Producing shoots from the rootstock.
Superior (ovary). Free from the calyx or hypanthium.
Suspended (ovule). Hanging from the apex of the cell.
Suture. A line of splitting or opening.
Symmetrical. Applied to a flower with the different series of its parts of equal numbers.
Sympetalous. With united petals.
Syngenecious. With stamens united by their anthers.
Synonym. A superseded or unused name.

Taproot. A stout vertical root which continues the main axis of the plant.
Tawny. Dull yellowish, with a tinge of brown.
Tendril. A thread-shaped process used for climbing.
Terete. Circular in cross-section.
Ternary. Consisting of three.
Ternate. Divided into three segments, or arranged in threes.
Tesellate. Checkered.
Testa. The outer coat or covering of the seed.
Tetra- (in compounds) means four.
Tetradynamous. Applied to stamens when there are six in the flower, four of them longer than the other two.
Tetragonal. Four-angled.
Tetramerous. Applied to flowers constructed on the numerical plan of four.
Thalloid. Resembling a thallus.
Thallus. A usually flat vegetative organ.
Throat. The orifice of a gamopetalous corolla or calyx; the part between the proper tube and the limb.
Thyrsoid. Like a thyrsus.
Thyrsus. A congested cyme.
Tomentose. Covered with tomentum.
Tomentulose. Diminutive of tomentose.
Tomentum. Dense matted wool-like hairs.
Torose. Cylindrical with contractions at intervals.
Torsion. Twisting of an organ.
Tortuous. Twisted or bent.
Torulose. Diminutive of Torose.
Torus. The receptacle of a flower.
Transverse. Across; in a right and left direction.
Tri- (in composition) three or thrice.
Triandrous. Having three stamens.
Trichotomous. Three-forked.
Tridentate. Three-toothed.
Trifoliolate. Having three leaflets.
Trigonous. Three-angled.
Triquetrous. Having three salient angles, the sides concave or channelled.
Truncate. Ending abruptly, as if cut off transversely.
Tuber. A thickened and short subterranean branch, having numerous buds.
Tubercle. The persistent base of the style in some Cyperaceae; a small projection.
Tuberculate. With rounded projections.
Tuberiferous. Bearing tubers.
Tuberous. Resembling a tuber.
Tumid. Swollen.
Tunicate. Coated; invested with layers, as an onion.
Turbinate. Top-shaped.
Turion. A scaly shoot from a subterranean bud.
Turioniferous. Bearing turions or suckers like the shoots of Asparagus.

Twining. Ascending by coiling round a support.

Umbel. A determinate, usually convex flower-cluster, with all the pedicels arising from the same point.
Umbellate. Borne in umbels; resembling an umbel.
Umbellet. A secondary umbel.
Umbellifer. A member of *Ammiaceae*, or Carrot Family.
Umbonate. Bearing a stout projection in the center; bossed.
Unarmed. Destitute of spines, prickles, and the like.
Ucinate. Hooked, or in form like a hook.
Undulate. With a wavy surface; repand.
Unguiculate. Contracted at base into a claw.
Uni- (in compounds) means one.
Unicellular. One-celled.
Unifoliolate. Applied to a compound leaf that has but one leaflet, as the leaves of the Orange and Lemon.
Unilocular. Possessing one locule or cell.
Uniserial. Arranged in one series. Applied to parts that are arranged in one horizontal whorl.
Unisexual. Having only one kind of sex-organs; applied also to flowers having only stamens or pistils.
Urceolate. Urn-shaped.
Utricle. A small, thin-walled, one-seeded fruit.
Utricular. Like a small bladder.

Vaginate. Surrounded by a sheath.
Valvate. Meeting by the margins in the bud, not overlapping; dehiscent by valves.
Valve. One of the pieces into which a dehiscent pod, or any similar body, splits.
Veinlet. The smaller ramifications of veins.
Veins. Threads of fibro-vascular tissue in a leaf or other organ, especially those which branch (as distinguished from nerves).
Velum. A fold of the inner side of the leaf-base in *Isoetes*.
Velutinous. Velvety; with dense fine pubescence.
Venation. The veining of leaves, etc.
Ventral, Ventrally. Being on the side next the axis.
Ventricose. Swelling unequally, or inflated on one side.
Venulose. Finely veiny.
Vernation. The arrangement of leaves in the bud.
Verrucose. Warty; covered with protuberances.
Versatile. An anther attached at or near its middle to the filament.
Verticil. A whorl.
Verticillaster. A pair of opposite cymes that occur in the axils of the leaves of Mints.
Verticillate. Whorled.
Vesicle. A small bladder or air-cavity.
Vespertine. Belonging to the evening; applied to flowers that open at nightfall.
Vexillum. The standard of a papilionaceous flower.
Villous. Bearing long and soft hairs.
Virgate. Wand-shaped; slender, straight and erect.
Viscid. Glutinous; sticky.

Whorl. A group of three similar organs or more, radiating from a node. Verticil.
Wing. Any membranous expansion.
Woolly. Clothed with long and entangled soft hairs.

Zoospore. Literally, an animal spore; a vegetable spore endowed with the power of locomotion, and therefore appearing like an animal.
Zygomorphous, Zygomorphic. Flowers which are divisible in only one plane into similar halves are called zygomorphous.

INDEX

The Latin names of genera and species are printed in common type, the synonyms are indicated by *italic*. the common or English names are in SMALL CAPITALS and the family names in CAPITALS. The synonyms are not given in the main text, but it was desirable to give the most commonly used ones in the index. The number of the genus to which each belongs is given in bold face within parentheses after the synonym, as (**25**).

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